Westchester County Department of Parks, Recreation and Conservation

Master Plan Phase II Report

Part 1

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PARKS
WESTCHESTER COUNTY

May 30, 2003

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EXECUTIVE SUMMARY

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PARKS
WESTCHESTER COUNTY

I. Introduction

At the conclusion of the first phase of a two-phase master planning effort in 1998, 14 items were identified as major recommendations to the County's park system sufficient to warrant further attention in the second phase of this two-phase project. Of these 14 recommendations, this report addresses eight of these issues. These elements include:

- The identification of potential locations and the development of feasible conceptual recommendations for both an additional County-operated swimming/aquatic center and a new, full-sized regulation golfing facility of either 9 or 18 holes;
- The development of conceptual recommendations for the inclusion of a new aquatic center into historic Playland Park;
- The development of individual conceptual master plans for: the Bronx River Parkway Reservation, Kensico Dam Plaza, Mountain Lakes Park, Kingsland Point Park and Sprain Ridge Park.
- Increased vigilance to historic and environmental conservation issues;
- The Master Plan's capability of supporting the implementation of the WCPRC's Open Space Policies;

The second phase of the Westchester County Parks Master Plan builds upon the recommendations put forth in Phase I. The ultimate purpose of the entire Master Plan project is for the reports to act as a dynamic document to guide the County well into this new century. The primary purpose of the Phase II study is to develop specific solutions to immediate needs and outline a long-range plan and policy for future open space recreational needs.

Phase I of the planning process achieved the following results:

- The preparation of a comprehensive physical inventory and operations analysis of all existing facilities;
- The establishment of benchmark criteria for county level facilities to see how Westchester County compares to other similar counties;
- The identification of short-term needs and long-term options and priorities for the Department's future operation of its parklands;
- The analysis of present and future operating and capital budgets; and
- The development of a conceptual Master Plan incorporating input from civic leaders, municipal park officials and planning professionals.

The Phase I Report concluded with a summary of specific courses of action identified as "Next Steps" to direct the Phase II portion of the work.

Where the first phase of the Master Plan project inventoried and assessed the existing facilities and identified both the short and long term recreational needs of the County's residents, this Phase II report includes the development of concept schemes and budgets for the facilities identified above to satisfy those present and future needs. These recommendations are based on projections of future demographics, growth patterns and revenue projections. The

recommendations also take into consideration the inherent tensions and balances existing between the competing priorities of active recreation and conservation/preservation values. The recommendations support and direct the future development and management of both preservation and recreational land uses.

This Phase II report is presented in two parts; Part 1 contains the text, tables and figures for each task's chapter. Each of the chapters begins with a map indicating the location of facility, a copy of the individual park information pages originally included in the Phase I Inventory for reference. Each chapter then continues with a section discussing the purpose and background history of the study, recommendations and finally, order-of-magnitude cost information to implement. Part 2 of the report contains proposed park concept plans, drawings and other supporting graphics.

II. Individual Parks Master Plan Summary

In the case of the Bronx River Parkway Reservation, Kensico Dam Plaza, Kingsland Point Park and Sprain Ridge Park, the plans in this second phase report identify multiple improvements that will both maintain the current levels of service and improve various aspects of each park previously identified as deficient. Mountain Lakes Park on the other hand, requires a comprehensive redevelopment plan that reassesses the services potentially offered by the park and the role it plays within the County park system as a whole. Because of its overall deteriorated condition, this situation presents the County with a once-in-a-generation opportunity to create a facility that will allow it to remain a viable component in the County's park system extending well into this century.

III. Individual Park Buildings Plan Summary

In addition to the recommendations for improvements to the various parks' grounds, recommendations for the maintenance and potential reuse of several existing parks' buildings are included. An existing conditions survey was conducted and a maintenance program has been developed for the Kingsland Point Park's Tarrytown Lighthouse. An existing conditions survey and potential reuse program has also been developed for the Kingsland Point Park Bathhouse. Reuse recommendations have also been made for both closed gas stations on the Bronx River Parkway. The existing conditions survey of all the buildings at Mountain Lakes Park indicate that virtually all the buildings there except two, are in such poor condition that it is recommended that they be demolished.

IV. Summary of the Results and Recommendations of the Phase II Study

A. Swimming Study

Purpose

In addition to the planned reconfiguration of the Playland and Willson's Woods' pool facilities, the purpose of the study was to find a location for a new aquatic center, preferably south of I-287. Working with the previous program for an aquatic facility at Saxon Woods and the

feasibility of one at Willson's Woods, Phase II investigated the area and facility requirements for a new aquatic center based on component square footage of both indoor and outdoor facilities, mechanical and environmental systems, utilities, access, parking and bus transit links derived from a national overview of comparable facility types. Other existing Westchester County private and public swimming pools were analyzed for their potential conversion to an aquatic center as well as private aquatic parks for potential conversion to public use. Suitable site location parameters and characteristics were established for a new facility. These included: ten acres minimum area, close proximity to mass transit adequate parking and slopes less than 10%.

The Phase II Study then investigated three existing Westchester County parks for their suitability for a new aquatic center within their boundaries: Tibbetts Brook Park, Glen Island and Ridge Road Park. Ridge Road Park was ultimately rejected as a possible location as the size of the proposed facility had significant adverse impacts on adjacent roads, housing and woodlands. A concept proposed for Glen Island's facility was significantly reduced and squeezed into the southwest corner of the park adjacent to the bathhouse and mini-golf course so as to keep all proposed development out of the littoral zone along with minimizing impacts on the symmetrical lawn entry to the bath house and beach.

Recommendations

Only Tibbetts Brook Park was found to be suitable for the development of a new aquatic center facility.

B. Golf Study

Purpose

The purpose of the Phase II Golf Study was to identify potential locations for a new, full-sized Westchester County Parks operated golf facility. Working with the previously developed golf programs for Hudson Hills and the expansion of Mohansic, the Phase II study prepared a comprehensive program of golf course requirements for both a regulation 18 hole course and a 9-hole executive-style course. The program included acreage requirements, location criteria, infrastructure requirements (water supply, irrigation, storm drainage, etc.), mitigation for potential environmental impacts (sediment, fertilizer and run-off control, etc.), archeological/historical disruption, access, parking, support facilities (clubhouse, maintenance facilities etc.) and new concepts in golf course layout, teaching techniques (practice holes, greens, driving ranges, etc.). The area and site requirements criteria included:

- 18 hole regulation course: 150 acres (minimum), 175 acres preferred
- executive style course: 80 acres (minimum)
- par 3 course: 40 acres (+/-)
- long axis oriented north-south
- pitch and putt: 7-8 acres
- gently rolling topography
- access to potable water supply

The need for an additional golfing facility was well established in the Phase I Report. It noted that numerous previous studies indicated that Westchester County needs additional public golf

facilities to accommodate over 400,000 unplayed golf rounds/year; that existing County courses have reached their peak utilization; and, the County needs to accommodate senior play and the demand for practice facilities. The previous studies included:

- A Survey of Golfers Who Use the Public Courses of Westchester County: *prepared by the Public Opinion Learning Laboratory of Westchester Community College; sponsored by Westchester County under the program of the State University of New York (1990).*

- Report of the Real Estate Work Group Subcommittee on Golf Courses to the County Executive, Executive Summary. *(1994).*

- Golf Market Analysis Update for Westchester County Department of Parks, Recreation and Conservation, *prepared by NGF Consulting, Inc., for Westchester County (1995).*

Three options were investigated. These were: build a new course on a new site, acquire an existing golf facility and renovate it for County use or, add a golf facility to an existing Westchester County park that may or may not currently offer golf. Working with the Westchester County Planning Office and their real estate data base, Phase II evaluated available private and public open space in South and Central Westchester County (including existing clubs with acquisition potential) as well as County parks for course potential/course expansion utilizing the programmatic criteria and site conditions, land uses, adjacencies, archeological/historical and environmental considerations.

Westchester County's Real Estate and Planning Departments' data base did not indicate a suitable site that was available that met the necessary criteria. Additionally, an out-of-county search was conducted and while a suitable site was identified, it was decided that it was not a feasible idea for the County to develop a property outside Westchester.

Recommendations
- Purchase Loch Ledge. Convert the existing substandard 18 hole course into a regulation size 9 hole course, driving range and teaching facility;
- Add 9 holes to Mohansic Park in the least environmentally sensitive area.

C. Playland

Purpose
Evaluate the existing pool facility for its redevelopment potential into an aquatic center to better serve a broader user group mix.

Issues
- Historic - Playland is listed on the National Register of Historic Places
- Internal circulation - Simplify and provide clear routes for both vehicles (cars & buses) and pedestrians
- Pool replacement - Existing pool leaks and filtration system is in poor condition
- Accommodate - The proposed Children's Museum in the bathhouse

Recommendations

- Replace existing pool with a new, appropriately sized aquatic center that is sensitive to Playland's historic character. The new aquatic center's components could include:
    - a multi-use pool
    - a zero depth entry
    - a six lane lap pool for competition events
    - a kiddie drop slide
    - a spray deck
    - a lazy river
    - an activity pool
- Renovate the existing bathhouse, concession and changing rooms. Accommodate the proposed Children's Museum.

D. Kingsland Point Park

Purpose

- Develop a Master Plan that addresses a range of bathhouse and lighthouse reuse options and other future overall park site improvements.

Tasks

- Perform a comprehensive conditions analysis of the bathhouse, lighthouse and beach waterfront area.
- Develop reuse options for the bathhouse and lighthouse along with a park site master plan that can be phased in as the GM property's redevelopment plan becomes clearer as to site plan and adjacent land use options.

Recommendations

- Upgrade park entrance;
- Establish riverwalk along entire shoreline. Link with former GM Property;
- Shoreline restoration and beach expansion for Hudson River swimming;
- Upgrade pedestrian and vehicular circulation paths;
- Reuse options for the bathhouse:
    1. Develop facilities to permit special community events;
    2. Renovate 2nd floor for administration and maintenance staff use;
    3. Expand kayak/canoe concession space;
    4. Provide year round comfort station facility.

Recommendations for the historic Tarrytown Lighthouse:

1. Institute an ongoing maintenance program;
2. Develop a strategic historic restoration plan;

3. Reuse Option A: Lighthouse Lodge - A facility for overnight visits of school age children;
4. Reuse Option B: Lighthouse Museum - A facility featuring the Hudson River and its natural and maritime history;
5. Reuse Option C: Hudson River Ecosystem Study Center.

E. Mountain Lakes Park

Purpose

- Develop a Master Plan that reprograms and reinvigorates an underused seasonal day and overnight camping facility while preserving its rustic character.

Tasks

- Perform a comprehensive conditions analysis of all 110 existing camp buildings.
- Develop program elements for:
  - Day and Sleep Away Camp for county-wide Lessee's use;
  - Short-stay Overnight Public Camping;
  - Day Park Users;
  - Ecological Preservation.

Recommendations

- Develop site into two concurrent operations (Hemlock Lake and Spruce Lake)
  1. Hemlock Lake Camp:
     Day camp and longer term group camp facility with main lodges, secondary lodge and multi-use pavilions.
  2. Spruce Lake Camp:
     Public park uses with day and over night facilities (i.e. new cabins, lean-tos, main lodge and tent camping sites.

F. Bronx River Parkway Reservation

Purpose

- Develop a Master Plan that includes the extension of the bikeway/walkway, additional landscaping, streetscape, signage opportunities and potential adaptive reuses for the two original gas station buildings.

Tasks

- Perform inventory and analysis of existing conditions and functions;
- Develop recommendations in conjunction with the on-going programs of the Bronx River Parkway Reservation Corridor Management Plan and the Bronx River Parkway Reservation Conservancy;
- Develop reuse options for the two gas station buildings.

Recommendations

- Stabilize shorelines and streambanks with riparian vegetation and bioengineering methods;

- Remove vines and non-native invasive species and open up the river's edge for viewing;
- Install native plant material appropriate to present maintenance practices;
- Create a GIS map of all easements, town and county jurisdictions and responsibilities for ownership, maintenance and license agreements;
- Perform a Phase 1A archaeological report at all sensitive locations;
- Perform a pathway location study to connect the southern portion of the current pathway with the Oak Street loop section and connections to the Bronx;
- Perform an in-depth study of all lighting for the entire roadway. If lighting is recommended, use with historically appropriate lighting standards representative of the era in which the parkway was constructed;
- Replace guide rails and Jersey-shape barriers with more contextually sensitive style barrier alternatives;
- Where possible, retain and respect the original parkway design concepts;
- Provide consistent historically sensitive crosswalk treatments and signage at all pathway and local roadway intersections;
- Perform a comprehensive signage program study;
- Install additional historically appropriate benches throughout the pathway system.

G. Sprain Ridge Park

Purpose

- Develop a Master Plan that includes improved trail linkages, pedestrian and vehicular circulation, trails, picnicking and playground rehabilitation and recommendations for the rehabilitation and/or upgrade/expansion of the aquatic and food concession facilities.

Tasks

- Perform a functional needs analysis of the bath house, trails and park and pool entrance areas.

Recommendations

- Reconfigure the entrance road and pool drop-off area;
- Renovate the existing bath house, concession and changing rooms;
- Provide improved park perimeter and trail access security measures to prevent unauthorized park entry;
- Provide adequate signage for bikeway connection to the South County Trailway;
- Reconfigure food concession area to serve both pool and park users;
- Renovate the existing bathhouse, concession and changing rooms;
- Rebuild spray pool facilities - install children's aquatic playground.

H. Kensico Dam Plaza

Purpose

- Develop a Master Plan that includes the rehabilitation of the colonnade structure, the rehabilitation and/or expansion of the park center building to accommodate large-scale County events and a variety of other new functions.

Tasks

- Perform a functional needs and physical conditions analysis of the existing park building, trails, dam plaza and park entrance areas.

Recommendations

- Reconstruct inner path around reflecting pool;
- Rehabilitate and expand existing park building;
- Create a major Kensico Dam Plaza entry at intersection with the Bronx River Parkway and its bike path;
- Augment existing plantings at allee and increase plantings around lawn areas;
- Enhance views to the dam;
- Stabilize side slopes flanking the dam;
- Add drainage improvements;
- Develop a turf management plan.

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SWIMMING STUDY

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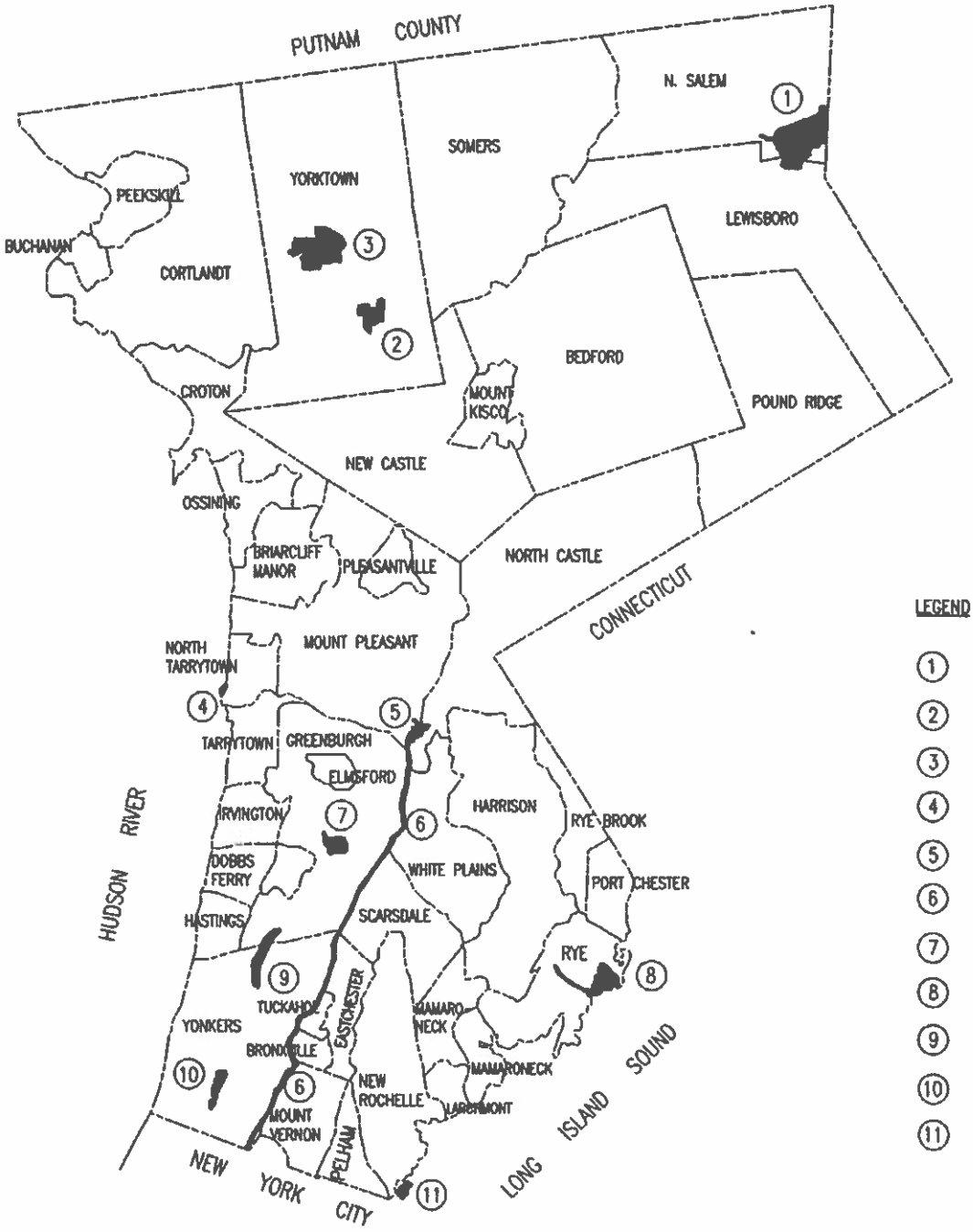

LEGEND

1	MOUNTAIN LAKES PARK
2	LOCH LEDGE GOLF COURSE
3	MOHANSIC GOLF COURSE
4	KINGSLAND PARK
5	KENSICO DAM PLAZA
6	BRONX RIVER PARKWAY
7	RIDGE ROAD PARK
8	PLAYLAND PARK
9	SPRAIN RIDGE PARK
10	TIBBETTS BROOK PARK
11	GLEN ISLAND

LOCATION PLAN
NOT TO SCALE

RIDGE ROAD PARK

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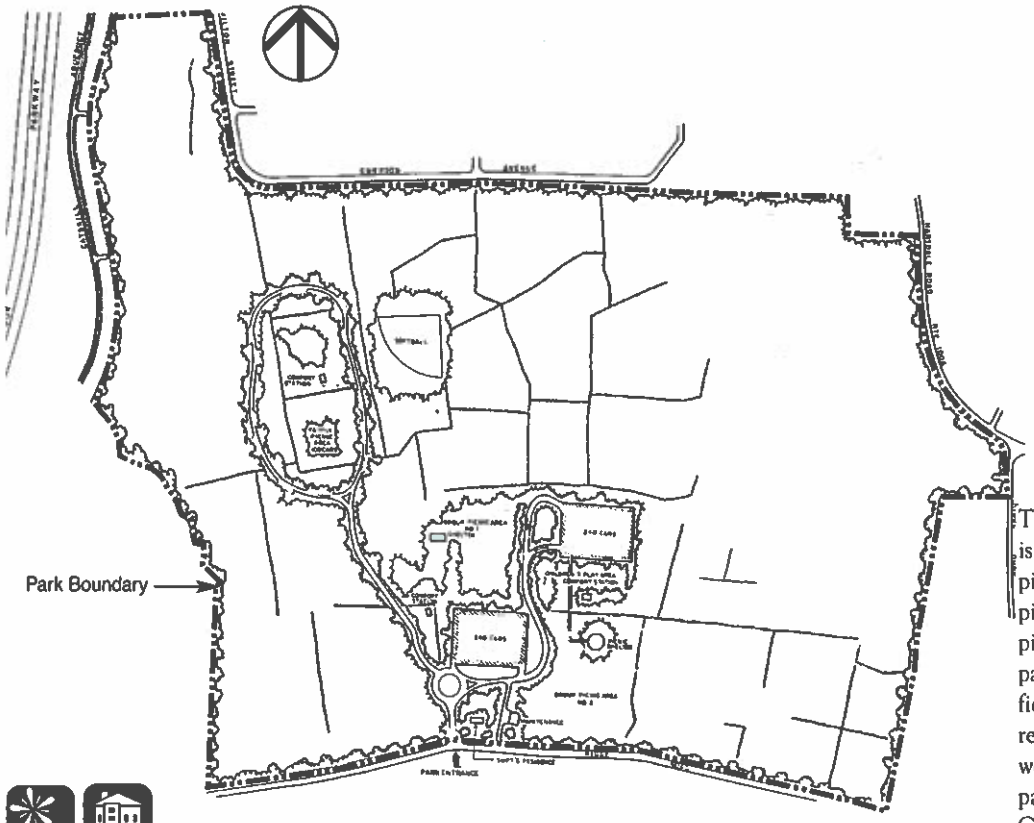


Map

The developed portion of the park is fairly level, set up for large group picnics as well as individual family picnics. The two reserved group picnic areas contain a playground, pavillions, comfort station, ball-fields and large parking areas. The remainder of the park is heavily wooded with very few trails. The park lies within the Greenburgh/Hartsdale residential district.

Individual Picnic Areas Located Off Loop, North Portion of Park

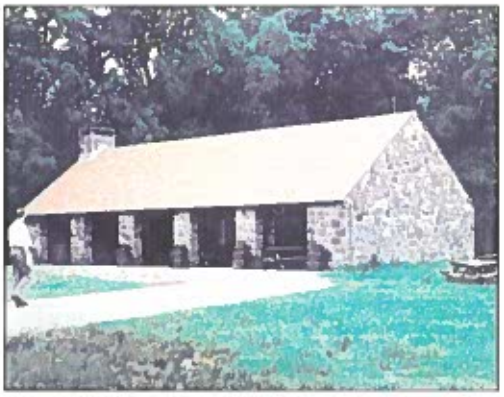
Date Acquired: *1925*

Acreage: *170 Acres*

Location: *Hartsdale/Greenburgh*

Major Activities:
- *picnicking with playgrounds*
- *group and family use*
- *ball fields*
- *walking*

View from Group Picnic Area to Open Lawn for Activities



Picnic Pavilion-Recently Restored

Interior of Picnic Pavilion

GLEN ISLAND PARK

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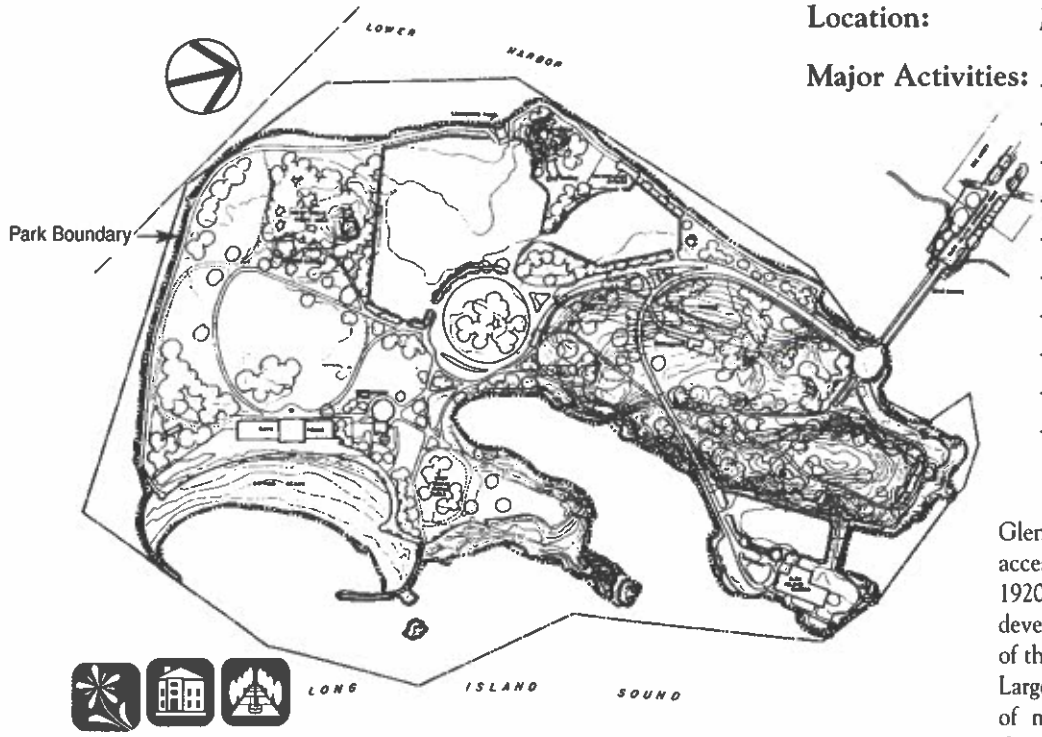
Date Acquired: *1923*

Acreage: *105 Acres*

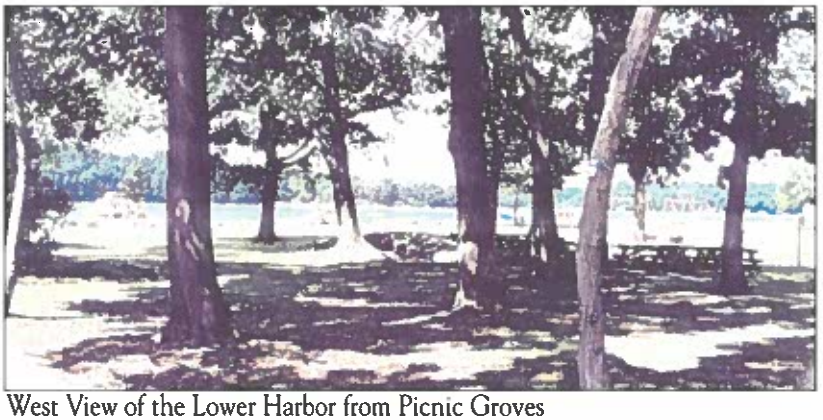
Location: *New Rochelle*

Major Activities:
- *swimming*
- *picnicking with playgrounds*
- *boat launch*
- *fishing*
- *mini-golf*
- *walking*
- *biking*
- *in-line skating*
- *concession/refreshments*
- *Glen Island Casino/Restaurant*

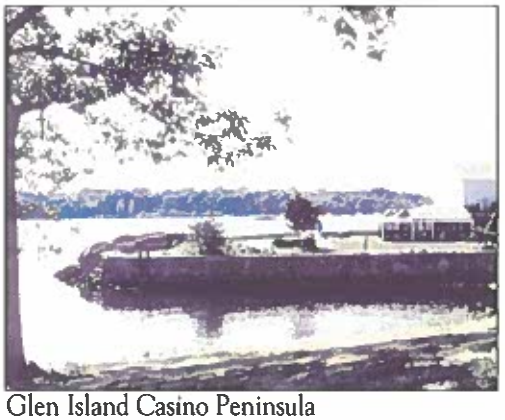


Map

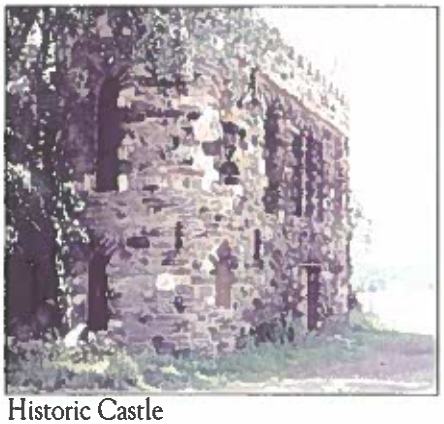
Glen Island Park is an island property accessed by a drawbridge built in the 1920's. The park is fairly level and heavily developed. The original design and layout of the park was completed in the twenties. Large open lawns are connected to groves of mature trees with asphalt pathways throughout.



West View of the Lower Harbor from Picnic Groves



Glen Island Casino Peninsula



Historic Castle

Multi Use Great Lawn

GLEN ISLAND PARK

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View across Beach from Bath House

Bathing Beach

Mini-Golf Course

TIBBETTS BROOK PARK

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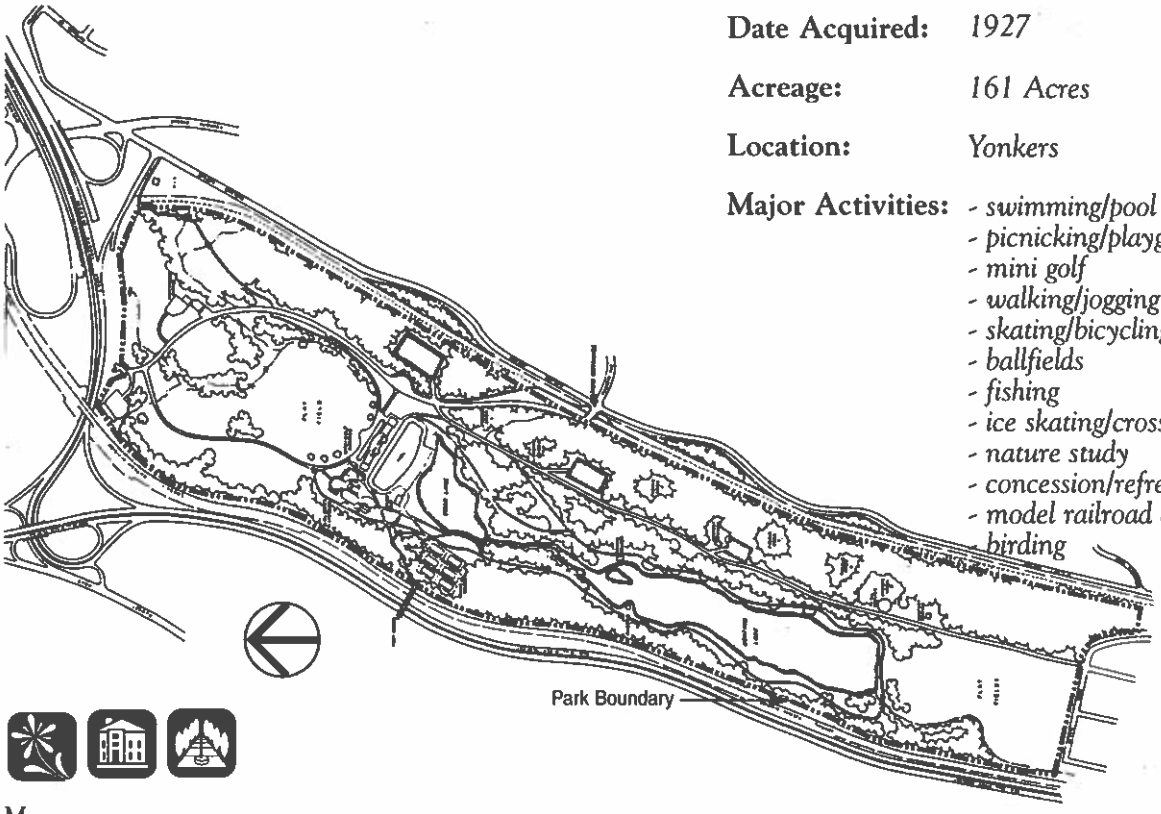


Map

Date Acquired: *1927*

Acreage: *161 Acres*

Location: *Yonkers*

Major Activities:
- *swimming/pool*
- *picnicking/playground*
- *mini golf*
- *walking/jogging*
- *skating/bicycling*
- *ballfields*
- *fishing*
- *ice skating/cross country skiing*
- *nature study*
- *concession/refreshments*
- *model railroad club*
- *birding*

Typical View at Tibbetts Brook-North View of Boating Lake

The park boasts a splendid design of developed landscape leading into the natural environment. Tibbetts is characterized by large open fields of mowed grass, a paved loop path system surrounding a string of ponds and a brook all surrounded in turn by a woodland buffer. The park is bordered on the west by the county owned former Putnam Division Railroad Line. A bike route is planned for this corridor. The park is often referred to as a bastion of green space within the built environment of Yonkers.

South Vista View of Bath House & Open Playfield

Pool & Water Features

Miniature Golf Course

I. Introduction

The September 1, 2000 issue of The Wall Street Journal included a front-page article entitled *"Life is a Beach but You Don't Have to Swim in the Ocean."* The article reported on the recent increase of multi-use swimming pools and aquatic facilities in the United States stating "Nationally, water amusement centers featuring artificial waves, wet slides and therapeutic pools have doubled in number to nearly 1,000 since 1995." This is particularly good news to the thousands of parks' administrators and visitors throughout the country who have been waiting for this trend for nearly twenty years because since the late 1970's and early 1980's, municipal pools nationwide have been experiencing declines in attendance.

Consistent with the national trends presented above, attendance at some Westchester County Pools had been declining since 1980. The lack of diversity in the County pool facilities coupled with increases maintenance costs and demand for more creative water play solutions led Westchester County to explore alternatives in aquatic play. The Westchester County PRC followed a national trend by adding inventive waterplay features including zero depth pools, wave pools and water slides at some of the existing pool facilities. These facilities have been extremely successful and popular with Westchester County residents. Two parks in southern Westchester have been designated for additional water play features. Willson's Wood's Park in Mount Vernon is presently undergoing a conversion of its large underutilized pool into a multi-pool and activity aquatic center. Likewise, Sprain Ridge Park pool in Greenburgh and Yonkers also has a new water activity feature that has been designed and soon under construction. Continuing this trend, the WCPRC would like to provide additional aquatic facilities within the County.

This report presents the programmatic areas requirements for a new aquatic facility in Westchester County, recommends potential sites within the southern portion of the county, and compares these sites with demographic data for other successful public aquatic facilities throughout the United States. The report also includes detailed information on other public aquatic facilities throughout the Country. The public parks discussed in detail were selected because they have some similarity to areas in Westchester likely to be home for the next aquatic park. The report also includes extensive comparative data on aquatic and non-aquatic amenities, programs, operations and maintenance, staffing levels and revenue provided by public and private aquatic facilities in the US.

1.1 Area and Facility Requirements for a New Facility

The research and data collection results described in this chapter have yielded rough parameters within which the proposed aquatic center should fall. The features provided by the proposed aquatic facility will be largely based on the proposed Saxon Woods Pool

program as well as a survey of public aquatic facilities nationwide. This section describes the reasons for focusing the search for a potential site within the southern portion of the County, and provides recommendations for the facility amenities, staffing, operations and maintenance, and fees and membership.

Discussions with WCPRC staff supported by T*he Residents Recreation Preferences Survey* indicated that the new facility should be located in the southern part of the County. The Westchester County Parks Master Plan – Phase I Report defined South County as encompassing Bronxville, East Chester, Larchmont, Mamaroneck (Village and Town), Mt. Vernon, New Rochelle, Pelham, Rye, Tuckahoe and Yonkers. The Westchester County Parks Department landholdings in the southern part of the county include:

- Sprain Ridge Park (water features designed, under construction)
- Sprain Lake Golf Course
- Twin Lakes Nature Study Woods Park
- Saxon Woods Park and Golf Course
- Tibbetts Brook Park
- Willson's Woods Park (pool conversion to multi-activity underway)
- Dunwoodie Golf Course
- Glen Island Park
- Lenoir Preserve
- Maple Moor Golf Course
- Marshlands Conservancy
- Rye Playland
- Edith Read Nature Park and Sanctuary, and

Of these landholdings in the southern portion of the county, the only parks suitable for an aquatic facility are Sprain Ridge Park, Saxon Woods Park, Tibbetts Brook and Rye Playland for the following reasons. All of the golf courses (Sprain Lake, Saxon Woods, Dunwoodie and Maple Moor) have been eliminated from consideration. Twin Lakes, Marshlands Conservancy, Lenoir Preserve and Edith Read Nature Park and Sanctuary are not suitable for an active recreation installation. The Saxon Woods DEIS concluded that no existing pool (Sprain Ridge, Saxon Woods, Tibbetts Brook, and Rye Playland) except Saxon Woods, could be expanded to incorporate a major aquatic facility without significant environmental impact to the surrounding park. Upon further evaluation of potential Tibbetts Brook and Rye Playland Park sites for contextually designed aquatic centers, it was determined that they would be included given the pool-based recreation already attracting significant visitation. The expansion of Saxon Woods Pool was eliminated after substantial community opposition. Current plans for Wilson's Woods Park include a pool conversion project. The water activity feature at Sprain Ridge Park has been designed and is presently under construction.

Despite the potential for significant environmental impacts noted in the Saxon Woods DEIS, Master Plans for Sprain Ridge Pool, Tibbetts Brook, Glen Island, and Rye Playland are being completed as part of this Phase II Report. These plans may include suggestions for expansion or reconfiguration of the existing pool/beach facilities. Although not in southern Westchester, the relatively under developed Ridge Road Park was added as a potential aquatic facility site at the suggestion of the WCPRC staff.

Research of other public aquatic centers in the United States revealed that the minimum size of the facility should be 10 acres. The proposed aquatic center at Saxon Woods would have occupied the majority of the existing pool footprint or 14.5 acres. A cap of 50 acres was set because is it unlikely that a larger parcel will be available and also not possible to expand an existing County pool. Therefore the site search focused on open space parcels greater than 10 but less than 50 acres.

Visitation and attendance research for aquatic facilities throughout the county indicates that the majority of aquatic center visitors come from between 0 and 10 miles from the facility. The expected average daily attendance at the proposed Saxon Woods facility was 1,700/day and peak attendance was 3,400/day on holiday weekends. Seasonal attendance levels were expected to reach 150,000 in the first season and expected to grow to 213,000 after five years.

As noted above, the aquatic center should be located in the south portion of the County. Since there are currently public pools in Scarsdale and Yonkers, our site search focused on areas north of Yonkers and south of Scarsdale. Minimizing environmental impacts and community impacts is also a priority for site location. The aquatic facility should also be near a major transportation route and more importantly be directly accessible to and from public transit.

Facilities

The proposed aquatic facility would offer many of the same features proposed for Saxon Woods including:

- 9,500 s.f. in-ground wave pool
- 18,000 s.f. "lazy" river with a slow-moving current (attached to the in-ground wave pool)
- 25-yard (75 feet) by 25-meter (82 feet) In-ground lap pool
- 2 Adult aquatic slides no higher than 25 feet
- In-ground splashdown pool
- Log and lily pad walks over an 868 s.f. in-ground pool
- 500 s.f. in-ground relaxing pool
- 3 Children's aquatic slides no higher than 5 feet leading to an in-ground splash pool
- 1,820 s.f. in-ground "animal pool"
- 1,800 s.f. children's "Sprayground"

The proposed plan would also include the following non-aquatic facilities

- Picnic areas
- Sunning lawns and decks
- 900 s.f. (30 x 30) one-story food service counter building
- Outdoor dining facility with approximately 20 tables
- Maintenance buildings
- One-story 900 s.f. (30 x 30) pump house and tube repair building
- 2,000 s.f (40 x 50) comfort station buildings
- Two one-story 600 s.f. (20 x 30) buildings with changing rooms

Staffing

The majority of aquatic centers surveyed are managed by members of the permanent Parks Department personnel and augmented with seasonal staff. In all cases, the aquatic centers are managed and maintained by the Parks Department, not an outside operator. However, concessions are managed by the Parks Department or outside concessionaires. Seasonal staff includes lifeguards, additional maintenance personnel, cashiers, swim instructors and in some cases, volunteers. Current staffing levels at the Saxon Woods Pool are 5 full time employees and 72 seasonal employees. Staffing levels were not expected to increase with the reconfiguration of the existing pool facility.

It is essential that all staff be properly trained in basic and advanced water safety. A list of lifeguard and pool operator and certification instructors is included in the Appendix to this document. Most training and certification programs require that participants are at least 18-20 years old, able to swim 200 yards without resting, to tread water using only their legs for at least two minutes, and to recover a 10 pound object from eight feet of water.

While the director of the pool must be a Certified Pool Operator (CPO), it is also recommended that aquatic center staff are certified in the following areas: Waterpark Deep Water Lifeguard; Basic Lifeguard; Waterpark Shallow Water Lifeguard; Waterpark Attendant and Waterpark Sentry. Certification programs include instruction on victim recognition, vigilance, water rescue skills, and use of the Heimlich Maneuver in the water, first aid and CPR.

Operations and Maintenance

The facility will be maintained and operated by the Westchester County Department of Parks, Recreation and Conservation with an appropriate management structure.

Based on research collected from other public aquatic centers in the United States, separate water circulation systems for each of the proposed pools is recommended. While somewhat more expensive, there are considerable benefits to installing separate

circulation systems including more control over water temperature and chemical balances and, when necessary, the ability to shut down one pool rather than the entire system.

Fees and Membership

The proposed facility would be open to Westchester County residents with park passes and their guests. The Saxon Woods DEIS noted proposed admission fees and season pass costs, which were and remain to be, considerably higher than the existing fee structure. It was expected that revenues generated by the facility would cover all capital and operating costs for the proposed aquatic facility and were therefore quite high. Increases in attendance and admission fees would generate enough revenue to produce and entirely self-sustaining facility. The following section presents 2000 fee data and the fee structure proposed in the 1994 DEIS.

In the 2000 summer season, the Westchester County Resident Park Pass cost $30.00 per person but all pools charge an additional fee. The pass lasts for 3 years, allows holders entry into all County-owned Park facilities, and provides discounts in user and parking fees. Children under 12 do not require passes for park admission. A Resident Park Pass is required for admission to the pools at Wilson's Woods, Tibbetts Brook, Sprain Ridge, and Saxon Woods. In addition, fees were charged at the following pools and beach facilities:

Willson's Woods Pool, Tibbetts Brook Pool, Croton Point Beach, Glen Island Beach, and Spruce Lake at Mountain Lakes	
Resident Park Pass (required for admission at all except Croton Point and Playland)	$30.00
Adults	$4.00
Children (ages 5-11, under 5 yrs old free)	$2.25
Senior Citizens (with Westchester County Senior Citizen I.D. card; weekdays only)	$2.00
Family Pool Permit (available at Willson's Woods only)	$25.00
Parking Fee	
Passenger cars, motorcycles, vans, campers	$3.50
Seniors (with Westchester County Senior Citizen I.D. card; weekdays only)	$0.75
Mini-buses	$10.00
Buses	$28.75

Under the current fee structure, each trip to these pools or beaches would cost a family of four with children over the age of twelve, $16.00, not including refreshments. This $16.00 per visit is in addition to the one time cost of $30.00 per person for the Resident Park Pass also required for admission.

Saxon Woods and Sprain Ridge Pool (INCLUDES PARKING)	
	Existing (2000)
Resident Park Pass (required for admission)	$30.00
Adults	$4.70
Children (ages 5-11, under 5 yrs old free)	$3.00
Senior Citizens (with Westchester County Senior Citizen I.D. card; weekdays only)	$2.75

Saxon Woods also offers a combination admission package for the Pool and Miniature Golf. Fees are $6.00 for adults and $4.00 for children (age 11 and under) and include parking. A visit to the Saxon Woods and Sprain Ridge Pools would cost a family of four approximately $15.00, which includes parking but does not include refreshments. This fee is also in addition to the one time cost of the Resident Park Pass required for admission.

Playland	
Pool Admission	
Adults	$4.50
Children (under 50 inches; infants- free))	$2.50
Senior Citizens (with Westchester County Senior Citizen I.D. card; weekdays only)	$2.50
Beach Admission	
Adults	$3.25
Children (under 50 inches; infants- free)	$1.50
Senior Citizens (with Westchester County Senior Citizen I.D. card; weekdays only)	$1.50
Parking Fee	
Tuesday - Friday – Passenger cars, motorcycles, vans, campers	$4.00
Buses	$15.00
Saturday - Sunday - Passenger cars, motorcycles, vans, campers	$5.00
Buses (includes $50 credit for ride tickets)	$100.00
Holidays -- Passenger cars, motorcycles, vans, campers	$7.00
Buses (includes $50 credit for ride tickets)	$100.00
Seniors (with Westchester County Senior Citizen I.D. card; Tuesday-Friday only)	$1.00

The County also offers discount tickets after 4PM at all swimming facilities as part of their Twilight Swim Program.

1.2 Aquatic Facility Site Location Analysis

The Westchester County Parks Phase I Master Plan included the results of the Residents Recreation Preferences survey conducted by the Westchester County Department of Planning and the Department of Parks, Recreation and Preservation. This section provides a summary of those results and a comparison of the results of the survey with the public aquatic facility data presented above. These results support the decision to

locate the aquatic facility in the southern portion of the County. The section also includes a description of demographics for potential sites for a new aquatic facility.

Residents Recreation Preferences Survey

The top three most popular activities by age groups were as follows:

Rank	0-5 Years	6-11 Years	12-18 Years	19-35 Years	35-59 Years	60+ Years
1	Playground	Swimming	Swimming	Jog/Walking	Jog/Walking	Jog/Walking
2	Swimming	Bicycling	Bicycling	Swimming	Swimming	Cultural Performances
3	Picnicking	Playground	Basketball	Bicycling	Historic Sites/Museums	Historic Sites/Museums

As indicated above, swimming was among the top three most popular activities within every age group except the "60+ Years". The survey also ranked the most popular activities by geographic area, which were essentially in the same order for North, Central and South County households and were as follows:

1. Jogging/Walking
2. Swimming
3. Bicycling
4. Historic Sites/Museums
5. Cultural Performances

As noted in the Phase I Master Plan Report, survey results indicated a clear relationship between the respondents' place of residence and their knowledge of the parks/facilities. Respondent householders are also more likely to visit parks in the geographic area in which they live.

The comparative data detailed in the previous section indicates that the majority of public aquatic facility visitors come from within 0-10 miles of the facility. This tendency is supported by the results of the Recreation Survey, which indicated a propensity for Westchester County residents to visit recreational facilities within their community. The Survey results indicate the popularity of swimming among all age groups, except the 60+ age group.

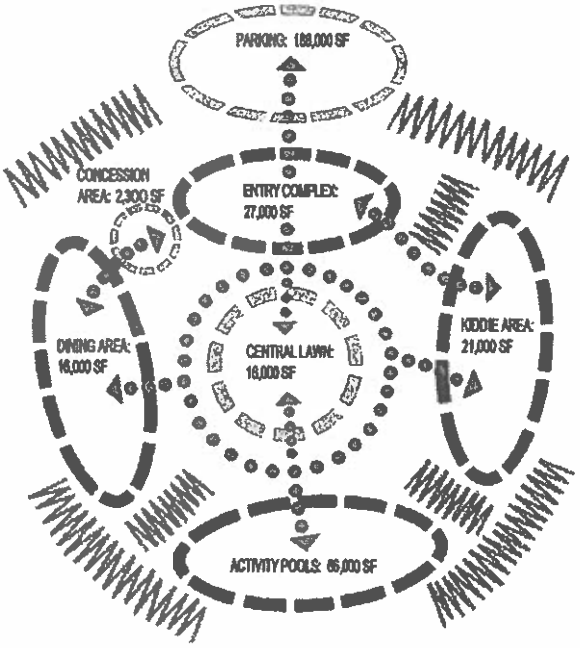
The top suggestions for sports/recreational improvement/expansion by activity were bicycling (27.6 %), swimming (26.2%), cultural performances (25.6%), jogging/walking (25.3%), historic sites/museums (19.1%), golf (18.4 %), ice skating/hockey (17.8%), picnicking (16.8%), nature study (16.3%), playgrounds (14.1%) and tennis (13.9%). Nearly 73 percent of respondents indicated the preference for facilities with a series of smaller pools, as opposed to one single pool.

The analysis indicates a clear demand for new pools and aquatic facilities in Westchester County. While the County would consider building a four season aquatic facility (indoor pools), the preferences survey indicated a demand for an outdoor facility with multiple pools.

1.3 Available Public and Private Open Spaces in Westchester County

General Aquatic Facility Layout:

The first step is to develop a generic aquatic facility layout based on ideal adjacencies of the various recreation components as well as an ideal circulation path for the various age groups using the facility. This layout is shown in the figure below:



The following list represents the objectives for the aquatic facility design:

- Parking for facility users is located in close proximity to bathhouse/entrance;
- A central hub/lawn area around which other activities are located provides optimum circulation between all the major features of the aquatic park;
- Children's spray area and kiddy pool should be located closer to the entrance/restrooms/concession and separated from the deeper bodies of water for safety purposes;
- Concession/eating areas are located close to bathhouse and restrooms and away from main aquatic facility activity;

- Slides, activity pools, lazy rivers are located in closer proximity to each other and away from smaller kids areas;
- Overall aquatic park is organized to provide a comfortable amount of deck space around pools and spray areas;
- Lawn areas and plantings are located to provide shade;
- Features that draw high percentage of sunbathers, such as wave pools and zero-depth entry pools should be sited to allow sunbathers optimum southern orientation.

Discussions with staff of both the Westchester County Department of Planning and the Parks and Recreation Commission indicated that no available private land holdings are available for purchase in southern Westchester which meet these parameters. Likewise, based on these parameters, Tibbetts Brook, Ridge Road Park and Glen Island Parks were selected for further site development analysis. They were also chosen for their location next to major urban centers and potential unsatisfied aquatic center recreation demand, their access via bus transit and their available parking areas and open space for its development

Tibbetts Brook Park:

Tibbetts Brook Park is located in Yonkers. Primary vehicular access to Tibbetts Brook Park is via the Saw Mill Parkway or Hutchinson River Parkway to the Cross County Parkway. Westchester County's Bee-Line bus system #7 and #25 stops at Midland Avenue and Yonkers Avenue. This is the closest bus stop for Park access.

Tibbetts Brook Park is 161 acres and includes woodlands, lakes, playing fields, playgrounds and a swimming complex. The park was opened in 1927 and should be considered an historic landscape and holds potential for listing with the National Register of Historic Places.

The park's main building is the Bathhouse, completed in 1928 and located between the mini-golf course and the oversized pool. A two-part lake bordered by woodlands and park pathways is located to the south of the pool complex. The large pool has for many years been a maintenance and operational problem for the County. As in both Willson Woods and Saxon Woods the large pools have seen a significant fall-off in swimmers even on hot summer weekends but still require significant lifeguard staffing. In the case of Tibbetts the pool has been leaking and its pumps and filtration equipment need continual maintenance and upgrading.

From a careful site analysis, available utilities and vehicular and pedestrian circulation study, we have sited the proposed aquatic center as shown on Tibbetts Brook sheets one and two. The pool has been subdivided into a reduced existing central zero entry pool with sprayers, an eastern lap pool and a western splash pool with water slide.

Advantages for siting an aquatic facility as shown:

- Utilizing the pedestrian control function provided by the bathhouse entry, the most feasible area is near the existing swimming pool and west to the area of the tennis courts;
- The tennis courts have been reconditioned and will serve as the southern boundary to the proposed aquatic facility zone;
- The ancillary support functions of the bathhouse, concession, restrooms, and existing pool basin can be reused for the expanded aquatic center facility;
- The siting of the new facility does not compromise the historic importance of the park, its "Capability Brown-esque" two lake setting or the architecture of the bathhouse;
- The newly restored footbridge allows unobstructed pedestrian access from several Yonkers neighborhoods over the Saw Mill River Parkway directly to the Park's pathway network;
- The park's location in the urban south county and adjacent to the Saw Mill River Parkway and the Cross County Expressway makes it eminently accessible to automobiles and bus traffic.

Disadvantages to the site:

- Layout of the facility is slightly constricted to a linear layout due to the presence of the lakes, the reconditioned tennis courts and the large reconfigured pool into three separate activity areas.

Glen Island Park:

Glen Island Park is located in New Rochelle. Primary vehicular access to Glen Island is via the Hutchinson River Parkway or the New England Thruway. Westchester County's Bee-Line bus system #45 and #45Q lines offer a stop at Weyman Avenue and Pelham Shore Road. This is the closest bus stop for Park access.

Glen Island Park is an island property, approximately 105 acres, accessed by a drawbridge built in the 1920's. The topography of Glen Island is relatively flat with rock outcroppings. Features include a beach, restored bath house, catering hall and restaurant, picnic pavilions, castles, reserved and open picnic areas, mini golf course, boat launch, new Park office, parking lots and pathways.

The Bathhouse is located at the entrance to the beach and facing a circular, open lawn. The building was originally built in 1928 in a simple Neo-Georgian style and rehabilitated in 1991. Other buildings located around the elliptical lawn include the comfort station, two picnic shelters and a picnic pavilion in the Parks Department octagon standard design with an attached concession facility.

A reduced aquatic facility program and compacted layout is sited on the island's southwest sector as shown on Glen Island's sheets one and two.

Advantages for siting an aquatic facility as shown:

- A site south of the elliptical lawn area adjacent to the bathhouse, beach and miniature golf course seems to be most feasible due to the level terrain, adjacencies to the bathhouse, comfort station and open sunning and picnic area free from other structures;
- The bathhouse and comfort stations can be used to support the aquatic facility;
- This site allows optimum orientation for sunbathers towards the south;
- The site is within an easy walking distance of the major parking area;
- The site maintains a majority of the existing pedestrian pathways and circulation around the perimeter of the proposed aquatic facility;
- Existing mature trees can be incorporated into the site design of the facility to provide shaded areas for concessions and picnic areas.

Disadvantages to the proposed site:

- An aquatic facility would visually compromise the historic layout of the park and the symmetrical entry views to the restored bathhouse archway and opposing axial comfort station;
- The presence of ledge rock could present high construction costs for the subsurface pools;
- The existing parking lots gets filled up during summer weekends;
- There is a large portion of existing paved area for parking and no interest in expanding the lots;
- Aquatic facility could modestly compromise the existing use of the lawn area as passive recreation and picnicking;
- This site is susceptible to flooding being within the 100-year flood plain (A zone) and a wave action Z zone. (However, the bathhouse, built in 1928, has successfully survived identical conditions);
- This site is subject to local and state waterfront coastal management regulations;
- The drawbridge opens on boating demand and could cause access problems and delays during the summer.

Ridge Road Park:

Ridge Road Park is located in Hartsdale. Primary vehicular access to Ridge Road Park is via the Sprain Brook Parkway. Westchester County's Bee-Line bus system #20/21 lines stop at Central Avenue and Hartsdale Avenue. This is the closest bus stop for Park access.

Ridge Road Park is a 170-acre facility developed in 1925. The majority of the terrain is fairly flat and consists mostly of wooded areas and stone walls and is bordered by residences. The park has two main reserved group picnic areas with pavilions, comfort stations, volleyball courts and playgrounds. Picnic area 1, located closest to the park entrance has a stone pavilion and ball fields. The pavilion, built in 1942-1943, as part of the WPA is a one-story rectangular structure enclosed on the ends by gray field stone walls and has a large fireplace at one end. Picnic area 2 has a pavilion with an octagonal roof design and stone piers. Further back into the woodlands, there is a loop road with an additional group picnic area, a ball field and comfort station. Both group picnic facilities are well used but the family areas are often vacant. The proposed aquatic facility is sited immediately east of the entry traffic circle and the existing parking lot, replacing picnic area 2 and its octagonal pavilion, as shown on sheets one and two. As Ridge Road park does not provide adequate parking or an existing bathhouse, both components have to be added to the aquatic facility program.

Advantages for siting an aquatic facility:

- The area, currently picnic area 2, would provide a good location due to its relatively open, flat terrain;
- The site has good proximity to the park entrance, with enough distance from the road and surrounding residences to buffer and screen the facility;
- The existing parking lot in this area is in poor condition and needs replacement;
- The large expanse of flat terrain allows flexibility in layout and design of the facility;
- This site can accommodate a larger, more open layout of the aquatic facility.

Disadvantages to the site:

- This Park location is off of a winding, wooded road bordered by residences. The insertion of the aquatic center may cause traffic problems;
- Access to the aquatic facility by urban and suburban youth is a problem due to the lack of close public transportation and the travel distance to major urban and suburban centers.

1.4 Recommended Park Site for Aquatic Facility

An evaluation of all three existing park sites for the insertion of a new aquatic facility was performed jointly with WCPRC staff and management. A review of the above noted advantages/disadvantages resulted in eliminating both the Glen Island and Ridge Road proposed aquatic center sites and proposing the Tibbetts Brook site as the agreed upon primary site for complete preliminary design studies and eventual construction documents for an aquatic facility.

Order of Magnitude Cost Estimate for Tibbetts Brook Aquatic Facility

From the aquatic facility recommendations shown on two drawings in Part Two, the following costs are projected:

Removals	**$300,000**
Site Work Preparation	**$300,000**
Aquatic Playground	**$800,000**
Relaxing Pool	**$200,000**
Lazy River	**$800,000**
Bridge and Ramps	**$300,000**
Deck and Terraces	**$300,000**
Fencing and Lighting	**$300,000**
Mechanical Equipment	**$800,000**
Subtotal	**$4,100,000**
Contingency @ 15%	**$ 615,000**
Total	**$4,715,000**
SAY	**$4,750,000**

II. Description of Other Comparable Public and Private Facilities – Nationwide

This section presents detailed descriptions of public aquatic facilities across the United States. The facilities were selected because they represent a good cross section of water parks in varying climates, where the demographic and socioeconomic profiles of residents also vary. These facilities are funded, operated and maintained by City and County Departments of Parks and Recreation. The facilities vary in size and attractions and are presented in no particular order. The parks were selected to present a number of organizational, policy and operational options to Westchester County Parks.

The facility descriptions are divided into five categories as follows:

- Facility Amenities - Types of aquatic and non-aquatic facilities offered by the parks;
- Staffing Levels - Seasonal and off-season;
- Operations and Maintenance - Responsibilities, equipment and procedures;
- Fees and Membership Data;
- Attendance;
- Revenue - Where available costs for construction are included.

Following the descriptions is a comparison of various public facilities in areas that will be valuable to Westchester County in deciding which facilities they would like to provide. The parks are compared in such categories at attendance data

2.1 The Pool at Highlands Park – Westerville, Ohio

The City of Westerville is located within Franklin and Delaware Counties east of Columbus, Ohio. The City of Westerville Parks and Recreation Department runs The Pool at Highlands Park, the largest outdoor aquatics facility in Central Ohio, as well as the largest municipally run facility. The original 1973 facility included three pools; an Instructional Pool was added in 1985; the Wading Pool was added in 1989, the Waterslide in 1991and the Fountain Pool was added in 1993. This large rolling facility is located almost in the middle of a residential community. The facility is surrounded on all sides by an 8-ft wrought iron fence and is professionally landscaped by the Parks Division. There are several mature trees, large grassy areas - some elevated, on which families can picnic or sunbathe.

The following population and demographic information was collected from the 1990 Census of Population and Housing.

	Number	Percent of Total
Total Population	30,269	
Under 5 years	2,045	7
6 to 17 years old	6,759	22
18 to 24 years old	3,146	10
25 to 54 years old	13,907	46
55 and over	4,411	15
Total Households	10,178	
School Enrollment	9,559	80% of school population between 1 and 24
Median Family Income	$56,237	
Median Household Income	$52,500	

Facility Amenities

The entrance to The Pool facility is through the main lobby. The aquatic facility contains seven pools:

Pool	Characteristics	Gallons	Surface Area
8-Lane, 25 Meter Pool	3 ft. 6 in. slopes to 5 ft.	180,000	4,980 s.f
6-Lane, 25 Yard Pool	4 ft. slopes to 6 ft.	120,000	4,067 s.f.
12 Ft. deep Diving Well	Hopper Bottom 2, one-meter spring boards 1, three meter spring board	120,000	1,440 s.f.
Instructional Pool	2 ft. slopes to 3 ft. 6 inches	45,000	2,184 s.f.
Slide Pool	2 ft. with ramp and stair entry	40,000	2,620 s.f.

Pool	Characteristics	Gallons	Surface Area
	slopes to 3 ft 6 inches 2 story slide with 5 curve open design chute		
Fountain Pool	Zero depth entry slopes to 16 inches Large raindrop fountain in center	14,000	3,200 s.f.
Small Baby Pool	12 inches	3,400	453 s.f.

Highlands Park also offers several non-aquatic attractions included the following:

- One outdoor shelter house – covered cement slab construction with 20 picnic tables and 2 large charcoal grills
- One Sand Volleyball Court with regulation height net
- Two half-court basketball courts with regulation height nets
- One playground area with a variety of elevated play surfaces, 2 small slides and a swing set
- One concession stand with accompanying shade structures that house several picnic tables each and 2 large charcoal grills
- One large shade structure between the 8-lane and 6-lane pools, that contains several picnic tables
- One small shade structure, near the small baby pool, which contains several picnic tables
- Two large collapsible shade umbrellas

Staffing Levels

The Pool at Highlands Park is a seasonal facility, which opens Memorial Day and closes on Labor Day. The staff is primarily a seasonal one. The Aquatic Facility Manager is the only full time staff member. The staff for the 2000 season totaled 114, as follows:

- 13 Managers (1 Full Time Aquatic Facility, 4 Aquatic, 1 Maintenance, 1 Swimming Lessons, 4 Assistant Managers, 1 Front Office Manager, and 1 Concessions);
- 7 Front Office Staff,
- 15 Concessions Staff;
- 28 Water Safety Instructors (including the Aquatic Facility Manager and Aquatic Managers; 14 Swim Lesson Aides; 55 Lifeguards);
- 7 Contractual Staff – Swim/Dive Team (1 Head Coach, 2 Assistant Head Coaches, 2 Eight and Under Coaches, 1 Dive Team Coach, 1 Assistant Dive Coach)
- Contractual Staff – Aquatic Programs (1 Synchronized Swim Team Coach, 3 Water Aerobics Instructors, 1 Sign Language Interpreter).

Operations and Maintenance

The Aquatic Facility Manager oversees the daily physical facility operation and maintenance with the assistance of the Aquatic and Maintenance Managers. The Parks Maintenance Division also provides assistance when needed. The Aquatic Facility Manager and the Maintenance Manager are both Certified Pool Operators with the

National Swimming Pool Foundation. Aquatic Managers and Assistant Aquatic Managers are expected to monitor chemical levels as well as have a good understanding of all filter room operating procedures. The Lifeguard Staff are responsible for the cleaning and overall maintenance of the facility. Concession Staff are responsible for the Concessions Stand and its adjacent area. The Front Office Staff are responsible for the Front Office, lobby and its adjacent area. The Aquatic Managers on duty as well as each area Manager oversee all facility operations and maintenance.

The facility has three separate filtration systems, each located in its own pump house. The Main Filter Room is a DE filter system that handles the filtration and sanitization of the Diving Well, 6-Lane and 8-Lane Pools. The Fountain Filter Room controls filtration and sanitization of the Fountain and Instructional Pools. These are high rate sand filters. The Slide Filter Room controls filtration and sanitization for the Slide and Small Baby Pools. These are high rate sand filters. Strantrol Units control the sanitization system. Each pool has its own separate unit. Sodium Hyphochloride, liquid chlorine, is used as the sanitizer and Carbon Dioxide Gas is used to control the pH levels.

Fees and Membership

	City Resident		Non-Resident	
	Adult	**Child**	**Adult**	**Child**
Daily				
Before 6 PM	$4.00	$3.00	$6.00	$4.50
After 6 PM	$3.00	$2.00	$4.50	$3.00
Children Under 3 years old		Free		Free
Season Pass Fee				
Single Adult/Youth	$65		$100	
Seniors	$25		$40	
Family of Two	$105		$160	
Family of Three	$135		$205	
Family of Four	$155		$235	
Family of Five	$165		$250	
Each Additional Family Member	$30		$45	
Swimming Lessons (5 2-week sessions; 1 Saturdays-only 10-week session) Fees are per child/per session		$20		$20
Swim Team Participation	All members must have a season pass. There is a maximum of three fees charged per family with multiple children on the swim team.			
Water Walking (10 weeks, 2x/week)	$20		$25	
Aquarobics				
(10 weeks, 2x/week)	$30		$35	
(10 weeks, 3X/week)	$45		$50	
Pool Shelter Rental	$20 for first hour, $5 each additional hour		$30 for first hour, $5 each additional hour	

The Pools can also be rented for events with events ranging from fewer than 100 people (Residents pay $75/Hour; Non-Residents pay $113/Hour) to 2,000 people (Residents pay $640/hour; Non-Residents pay $960/Hour).

Attendance

Attendance is tracked as part of a daily reporting system and kept for daily admissions, lessons and aquatic programming, and rentals. 2000 attendance totals are as follows:

May/June:	56,871
July:	65,681
August/September:	37,923

Revenue

Revenue is tracked as part of the daily reporting system. Daily admissions, season pass sales, swimming lessons, aquatic programming, rental fees and miscellaneous income are all tracked individually.

May:	$223,687
June:	$138,437
July:	$41,953
August:	$21,187
September:	$1,381
Total	$426,645

2.2 NRH_20 – North Richland Hills, Texas

NRH_20 is located between Fort Worth and Dallas in North Richland Hills, Texas. NRH_20 is also known as the Dallas/Fort Worth Metroplex Family Water Park. The park is open to the public from Memorial Day through Labor Day, from 10AM through 6PM weekdays and weekends, with some late nights till 10PM.

In 1993, the City of North Richland Hills distributed a citywide recreation and amenities survey to determine the needs and preference of city residents. The number one response was an outdoor swimming facility. Rather than build the traditional city pool, the City Department of Parks and Recreation developed NRH_20. Brinkley Sargent Architects with Counsilman/Hunsaker & Associates supporting the aquatic attractions and filtration system developed the park's design. Construction of the facility began in October 1994 and NRH_20 opened to the public on June 1 1995.

	Number	Percent of Total
Total Population	45,895	
Under 5 years	3,956	9
6 to 17 years old	8,806	19
18 to 24 years old	4,724	10
25 to 54 years old	22,051	48
55 and over	6,358	14
School Enrollment	12,317	70% of school population between 1 and 24
Median Family Income	$42,677	
Median Household Income	$35,354	

Facility Amenities

NRH_20 offers several state-of-the-art aquatic features including:

- Water Slides
- Black Falls – an enclosed slide
- The Great White – an open flume
- The Blue Twister- enclosed twisting, turning slide
- Double Dipper-double rider inner tube slide
- Three Children's (48 inches and under) water slides
- The Green Extreme- the world's largest uphill water coaster; 7 stories high, 1,161 feet of twists
- The Endless River – Slow moving river
- Tad Pole Train Station – (for children below 54 inches) – Life sized train station with interactive water features
- Lily Pads and Log Walk
- Sonar Tea Cups and Raindrops
- NRH_20 Ocean – 12,000 s.f. Wave Pool – Pool depth ranges from 0 to 6 feet
- NRH_20 Ocean Beach – with 400 lounge chairs
- Shade Structures

NRH_20 also offers several non-aquatic attractions included the following:

- Park office complex
- Full service kitchen and food court
- Arcade
- Covered Group Pavilions
- Ice Cream Shop
- Professor Frogstein's Forest Picnic Area
- Gift Shop
- Tube rental building
- Bathhouses
- Family Rooms

- Lockers
- First Aid
- Sand Volleyball
- Dry playground

All of the special events offered by NRH_20 are family oriented. The most popular event of the 2000 season were Family Friday Night Dive-In Movies, which began in July and ran though the first two weeks in August. During the 2000 season, "PG" and "G" rated films such as "E.T" and "Free Willy" were shown at the Wave Pool. Another popular special event was the Cartoon Network's premier of the "Next Generation" cartoons. A big screen designed to look like a giant television was set up at the Wave Pool. Several "famous" cartoon characters, like "Dino" from "The Flintstones" appeared in costume so guests could have pictures taken with them. NRH_20 also hosted the Texas State Junior Lifeguard Competition and the National Pool and Waterpark Southwest Regional Lifeguard Competition.
NRH_20 also offers rentals, catered parties and birthday parties on their Party Island. By the first week in July 2000, the party island was booked through the summer. The Parks and Recreation Department provide everything from the cake to the party favors. These parties provide another good opportunity to get the word out on the park.

Sponsorships also form an integral part of the success of NRH_20, not only assisting in advertising the aquatic facility, but also in building community support. A large percentage of park visitors coming from outside the North Richland Hills area presented a good marketing opportunity to local advertisers. Through sponsorship packages with NRH_20, several local businesses took advantage of the opportunity to advertise to these guests and also gain community awareness. These sponsorships also allowed the Parks and Recreation Department to raise capital for special events and build strong community support for NRH_20.

Staffing Levels

Six full-time staff members and 225 seasonal staff members manage NRH_20. The full time employees are as follows:

- Marketing Specialist
- Operations Manager
- Revenue Coordinator
- Retail Supervisor
- Office Coordinator
- Maintenance Supervisor

Operations and Maintenance

All new equipment was purchased for the facility including all outdoor furniture (sand chairs, lounges and other tables and chairs); shade structures, lifeguard equipment (suits and rescue tubes). Ellis & Associates were retained for their aquatic risk management services evaluating lifeguards and the safety of the equipment.

The chemical systems are automated by a Strantol "System 4". The System 4 controls both the sanitizer and the pH settings can be checked from an office computer, either with a touch-tone phone or by direct contact at the machine. This controller allows the maintenance staff to add only those chemicals necessary for sanitation greatly reducing the chemical demand. An integrated Pacer Cats system processes all season pass sales, ticketing, entry and concessions. This system enables the Parks Department to receive real time information about attendance and sales (which would not be readily accessed from stand-alone cash registers).

Fees and Membership

	Admission
Daily	
54 inches and above	$12.95
Under 54 inches	$10.95
Children Under 3 years old	Free
Season Pass Fee	
1 Pass	$79.95
2 Passes	$149.90
3 Passes	$194.85
4 Passes	$229.80
Pavilion Rental (Seats 275)	
Half Pavilion	$125
Whole Pavilion	$225
Forest Picnic Area	
Monday-Thursday	$30/day
Friday, Saturday, Sunday	$40/day
Consignment Tickets Large Organizations can purchase discounted Daily Admission for their employees or members.	$9.50pp
Group Outings One adult/six children under 12. Available for groups of 15 or more	$9.95pp
Registered Group Discount Pre-registered Group Outings	$9.50pp
Registered Group Discount Pre-registered Group Outings	$9.50pp

	Admission
Pre-paid Discount	
Pre-registered Groups who pay, in full, prior to attendance	
15-50	$9.25
51-125	$8.75
126-300	$8.25
351-600	$7.50
601 +	$7.00

There are no fees for parking at NRH_20.
There are no fees for tube rental at NRH_20.

Attendance

Inaugural 1995 Season Attendance:
Projected: 94,000
Actual: 139,655

Actual attendance exceeded projected attendance by approximately 33 percent. This success was attributed largely to a widespread advertising campaign, sponsorships, special events, group outings, and customer service and park design.

Revenue

The $7.8 million funding to build NRH_20 came from a local half-cent sales tax. This tax is generally used to improve the city's park system and NRH_20 was, to date, the largest single use of the tax.

William Haralson & Associates projected $1.2 million in operational expenses for NRH_20. With revenues estimated at $1.7 million, the Parks and Recreation Department budgeted to make about $500,000. Most of the revenue was earmarked for reinvestment into NRH_20, and some for future improvements throughout other North Richland Hills Parks.

2.3 Ross Park Aquatic Complex – Pocatello, Idaho

Pocatello, Idaho is located in southeast Idaho, nestled at 4,448 feet in the western foothills of the Rocky Mountains along the Oregon Trail. The Ross Park Aquatic Complex is located in Pocatello, Idaho. Before the Ross Park Aquatic Complex was built, residents of Pocatello, Idaho drove 20 to 30 miles to the nearest Olympic Size Pool and water slides. Previously, one city swim team met the swimming needs of the 54,000 city residents. While it took seven years for city officials and designers to agree on the design and for voters to approve a bond measure to fund the program, construction of Ross Park took only eight months.

	Number	Percent of Total
Total Population	46,080	
Under 5 years	3,935	9
6 to 17 years old	10,014	22
18 to 24 years old	5,652	12
25 to 54 years old	18,276	40
55 and over	8,203	17
Total Households	17,183	
School Enrollment	15,935	68% of school population between 1 and 24
Median Family Income	$31,089	
Median Household Income	$24,995	

The Ross Park Aquatic Complex is open from 11AM to 9PM daily from Memorial Day to Labor Day.

Facility Amenities

The Ross Park Aquatic Center offers five separate pools:
- Zero-Depth Pool – 27,000 gallons
- Water Slide
- Activity Pool – 89,000 gallons
- Lazy River – 816 feet long
- Competition Pool

The 816-foot-long lazy river encircles the activity pool, which features giant inflatable rafts, water basketball, lily pads and a suspended cargo net. The 27,000-gallon circular zero-depth pool has a water-play structure with several spray features. Parents can pull lounge chairs to the edge of the pool. The main pool offers 8 lanes for lap swimming. The water slides, lazy river and activity pool (with water basketball) were most popular amount the young children and teens. The most popular facility at the Complex was the zero-depth pool, which featured a giant waterplay structure.
Ross Park also offers the following non-aquatic features:
- Concessions/vending machines
- Family dressing rooms
- Chaise Lounges

Operations and Maintenance

Ross Park Aquatic Complex houses five pools each with its own circulation system. Designers decided that with separate circulation systems, staff could more easily maintain proper water quality in each pool while avoiding closure of the entire facility if a problem occurred in one of the pools. Each pool also has different temperature requirements. Although more expensive, installing separate circulation systems allows the staff to turn over the water faster, to maintain water clarity, chemical balance and water quality in all

the pools. The pool temperatures are maintained at 84-85 degrees Fahrenheit. The temperature of the zero-depth pool generally rises a few degrees due to its design and shallow water.

Fees and Membership

	Admission
Daily	
Adults (19-64)	$6.50
Children (6-18)	$3.50
Toddlers (Under 5)	$2.50
Season Pass Fee	$80.00

Attendance

In its first season, from July 2 to Labor Day 1999, the Ross Park Aquatic Complex drew more than 63,000 patrons. In addition to Pocatello resident visitors, corporate events, youth, senior, family and other group events maintained daily visitation at its 2,500-person maximum capacity throughout the summer. Approximately 55 percent of park visitors were between 6 and 18 years old.

Revenue

The facility cost $3.2 million dollars raised largely from a $2.5 million bond resolution passed by City Residents. The remainder of the money came from a loan from the Pocatello Development Authority, a state agency that funds urban renewal projects. Revenues from the facility coupled with a $1.00 surcharge added to use and program fees will be used to pay off the loan.

In the first two months of operation, the facility turned a profit of $100,000, over the $300,000 in start-up costs. Park managers noted that money generated after patrons entered the park made the financial difference. One of the largest revenue generators was inner tube rental which accounted for $35,000 in revenue (12,000 inflatable tubes were rented in the first season). Another $18,000 of gross revenue was collected from candy vending machines, which were so popular, they had to be restocked two times/day.

2.4 Splash Island/Splash Zone – Charleston, South Carolina

The Charleston County Park and Recreation Commission runs two family water parks: Splash Island and Splash Zone. Splash Island is located within the Palmetto Island County Park and Splash Zone is located within the James Island County Park. Both water parks are open from 10AM to 6PM all weekends in May, daily from Memorial Day through August 8 and weekends through Labor Day.

	Number	Percent of Total
Total Population	80,414	
Under 5 years	5,756	7
6 to 17 years old	12,148	15
18 to 24 years old	14,006	17
25 to 54 years old	32,089	40
55 and over	16,415	21
Total Households	30,753	
School Enrollment	24,579	77% of school population between 1 and 24
Median Family Income	$32,212	
Median Household Income	$25,153	

SPLASH ISLAND

Facility Amenities

Splash Island is located within the Mt. Pleasant Palmetto Islands County Park and provides offers aquatic attractions for toddlers to pre-teens including:

- 200 foot slide
- 16 foot otter slides
- Sprays, geysers and raindrop waterfalls
- Cyclone (10 minute swirling water ride)
- Recreational Pool
- Snack bars
- Restrooms
- Showers/Changing areas
- Lockers
- Lounge Chairs

Operations and Maintenance

Net expenses for the operation and maintenance of Splash Island include salaries of all seasonal waterpark personnel including administration aides, lifeguards and concession facility workers, training, uniforms, all small equipment and supplies, consumables, printing (not including marketing materials), and other associated costs. The net expenses for operation and maintenance of Splash Island for the past four seasons are as follows:

1997: $88,823
1998: $74,572
1999: $103,193
2000: $81,903

Fees and Membership

In addition to the regular admission fee of $1.00 for the Palmetto Islands County Park, admission rates for Splash Island are as follows:

	Charleston County Resident	Non-Resident
Basic Splash Pass (includes seasonal admission to both parks and admission to WCP h20 Park at a discount)	$49.99 pp.	
Super Splash Pass (includes admission into all waterparks)	$89.99 pp.	
Daily	$5.99	$6.99
Children (under 42 inches)	$4.99	$4.99
Senior Citizen Rate (over 60)	$3.99	$3.99
Group Rate (15 or more)	$4.99 pp	$4.99 pp
Corporate Rate (100 + people) (500 + people)	 $3.99 $3.00	 $3.99 $3.00
Children (Under 2 years old	Free	Free
After 3PM (Mon. – Fri. only)	$3.95	$3.95
Locker Rental ($2.00 deposit)	$3.00	$3.00

The parks also offer two Birthday Party packages.

- The Basic Party Package – is $120.00 for a minimum of 20 people with each additional person charged $6.00
- The Super Party Package includes the above plus food and beverages from the Splash Island snack bar. Both parties include a cake, punch and party host/hostess.

Attendance

Total Splash Island attendance figures for the past four seasons are presented below:

Year	Attendance
1997	47,228
1998	39,903
1999	47,360
2000	43,000

Revenue

Total revenue for the Splash Island Water Park includes general admission, advance tickets, pass sales and lockers. The total water park for the past four seasons is as follows:

Operations and Maintenance

	Gross Revenue	Total Expenses	Net Revenue
1997	$197,912	$109,089	$88,823
1998	$182,881	$108,309	$74,572
1999	$216,693	$113,500	$103,193
2000	$196,209	$114,306	$81,903

Concessions

Concession expenses include cost of purchase for fresh food, repackaged foods and other assorted products offered at the concession stand.

	Revenue- Concessions	Expenses – Concession	Net Revenue - Concessions
1997	N/A	N/A	N/A
1998	$681,719	$564	$81,155
1999	$75,370	$49,476	$25,894
2000	$69,101	$50,025	$19,076

Vending Machines

	Revenue- Vending	Expenses – Vending	Net Revenue -Vending
1997	N/A	N/A	N/A
1998	767	351	$416
1999	$2,235	$1013	$1,222
2000	$3,010	$1504	$1,506

Birthday Party

Birthday Party expenses include employee salaries, small equipment, food, beverage and miscellaneous supplies.

	Revenue- Birthday Party	Expenses – Birthday Party	Net Revenue –Birthday Party
1997	$14,941	$8,939	$6,002
1998	$15,830	$6,998	$8,832
1999	$17,432	$5,331	$12,101
2000	$19,000	$10,690	$8,310

Net Revenue and Expenses

	Revenue	Expenses	Net Revenue
1997	$212,853	$118,028	$94825
1998	$261,197	$116,221	$144,976
1999	$311,730	$169,320	$142,410
2000	$287,320	$176,526	$110,794

SPLASH ZONE

Facility Amenities

Splash Zone is located within James Island County Park and offers the following attractions:

- 200 foot tube slide
- 200 foot open slide
- Caribbean play structure with slides, wheels and sprays
- 500 foot lazy river
- Recreational pool
- Snackbar
- Restrooms
- Showers/Changing areas
- Lockers
- Lounge Chairs

Fees and Membership

In addition to the regular admission fee of $1.00 for the James Island County Park, the admission rates for Splash Zone are as follows:

	Charleston County Resident	Non-Resident
Basic Splash Pass (includes seasonal admission to both parks and admission to WCP h20 Park at a discount)	$49.99 pp.	
Super Splash Pass (includes admission into all waterparks)	$89.99 pp.	
Daily	$7.99	$9.99
Children (under 42 inches)	$6.99	$6.99
Senior Citizen Rate (over 60)	$4.99	$4.99
Group Rate (15 or more)	$6.99 pp	$6.99 pp
Corporate Rate		
(100 + people)	$6.99	$6.99
(500 + people)	$6.00	$6.00
Children (Under 2 years old	Free	Free
After 3PM (Mon. – Fri. only)	$4.99	$4.99
Locker Rental ($2.00 deposit)		
Small Locker	$3.00	$3.00
Large Locker	$4.00	$4.00

Attendance

Year	Attendance
1997	122,447
1998	24,549
1999	108,759
2000	101,000

Revenue

Total revenue for the Splash Zone Water Park includes general admission, advance tickets, pass sales and lockers. The total water park for the past four seasons is as follows:

Operations and Maintenance

	Gross Revenue	Total Expenses	Net Revenue
1997	$732768	$563,869	$168,899
1998	$610029	$268,592	$341,437
1999	$680305	$256,661	$423,644
2000	$664407	$315,761	$348,646

Concessions
Concession expenses include cost of purchase for fresh food, babies wear, repackaged foods and other assorted products offered at the concession stand.

	Revenue-Concessions	Expenses – Concession	Net Revenue – Concessions
1997	$201,577	$97,939	$103,638
1998	$274	$42,098	$-41,824
1999	$205,372	$118,823	$86,549
2000	$192,400	$115,536	$76,864

Birthday Party
Birthday Party expenses include employee salaries, small equipment, food, beverage and miscellaneous supplies.

	Revenue- Birthday Party	Expenses – Birthday Party	Net Revenue –Birthday Party
1997	$17,507	$8,903	$8,604
1998	$16,929	$7,599	$9,330
1999	$18,039	$8,924	$9,115
2000	$16,200	$8,549	$7,651

Net Revenue and Expenses

	Revenue	Expenses	Net Revenue
1997	$951,582	$351,554	$600,028
1998	$627,232	$266,115	$361,117
1999	$903,716	$360,224	$543,492
2000	$873,007	$384,113	$488,894

2.5 Central Aquatics Center – Hurst, Texas
Chisholm Aquatics Center – Hurst, Texas

The City of Hurst Texas is located in Northeast Tarrant County, approximately nine miles from downtown Fort Worth and 18 miles from Downtown Dallas. Hurst is considered a major retail/commercial center and has access to the abundant cultural, sports and recreation amenities that Dallas and Fort Worth offer. Within easy driving distance of Hurst are Six Flags Over Texas, the Wet N' Wild Water Park, Ripley's Believe It or Not Museum and Trader's Village. All these facilities are privately owned, operated and maintained.

The City of Hurst Parks and Recreation Department is responsible for the promotion, organization, implementation and evaluation of youth and adult community leisure programs. These programs include operation of the Hurst Recreation and Tennis Centers, the Central and Chisholm Aquatics Centers, educational and recreational classroom programs, special events and facility reservations.

In 1995, the City of Hurst Texas operated two seasonal swimming pools: the Central Pool and the Chisholm Pool. Each facility was a thirty-year old "concrete box" with diving boards. The City hired Shrikel Rollins and Associates (SRA) to perform a "renovation vs. replacement study". Based on the results of the study, the City decided to replace both facilities and hired SRA to complete the design and construction documents for both projects.

The Central Aquatics Center opened with some features in 1996 and the Chisholm Aquatics Center opened with some features in 1997. Both Centers have been in regular operation for the 1998, 1999 and 2000 summer seasons. In March 2000, the National Recreation and Parks Association (NRPA) named the City of Hurst for cities in the 20,000-50,000-population category. This prestigious national award is presented annually to cities that demonstrate overall improvements in Aquatics programming, facilities, customer service, and staff training.

During the 2000 season, both the Central Aquatics Center and the Chisholm Aquatic Centers were open Monday through Friday from 12PM to 8PM, Saturday from 10AM to 6PM and Sunday 1PM to 6PM from Memorial Day through August 6th with some additional weekends only in August.

	Number	Percent of Total
Total Population	33,574	
Under 5 years	2,452	7
6 to 17 years old	5,937	18
18 to 24 years old	3,281	10
25 to 54 years old	15,390	46
55 and over	6,514	19
Total Household	12,779	
School Enrollment	8,345	72% of school population between 1 and 24
Median Family Income	$42,979	
Median Household Income	$37,473	

CENTRAL AQUATICS CENTER

Construction of the $2.4 million 1.3 acre Central Aquatics Center was completed in 1996.

Facility Amenities

The Central Aquatics Center offers the following aquatic features:

- Activity pool with zero depth entry
- Tumble buckets, raindrop, pipe falls
- Three berm slides
- Large slide with receiving pool
- Children's pool with water play unit

Central Aquatics Center also offers the following non-aquatic facilities:

- Bathhouse with concessions stand building
- Picnic plaza
- Two pavilions
- Shade structures
- Sand volleyball

The Dimensions of all pools and structures are as follows:

Structure	Surface	Gallons	Depth
Pools			
Activity Pool	5,590 s.f.	117,015	0'0"-5'6"
Children's Pool	2,371 s.f.	11,250	0'0"-1'0"
Receiving Pool	450 s.f.	9,745	2'6" - 3'6"
Buildings	Surface/Dimension	.	
Bathhouse	1,932 s.f.	69' x 28'	
Mechanical Building	1,248 s.f.	48' x 26'	
Concrete Decking	18,500 s.f. (4")		

CHISHOLM AQUATIC CENTER

Construction of the $2.6 million 3 acre Chisholm Aquatics Center was completed in 1997. This facility offers many of the same components as the Central Aquatics Center.

Facility Amenities

The Chisholm Aquatic Center includes the following features:

- Activity pool with zero depth entry
- Tumble buckets, raindrop, pipe falls
- Two large slides
- Six lap lanes
- Deep water with two diving boards
- Children's pool with water play unit

The Chisholm Aquatic Center also offers the following non-aquatic features:

- Bathhouse with concessions
- Picnic plaza
- Two pavilions
- Shade structures
- Sand volleyball

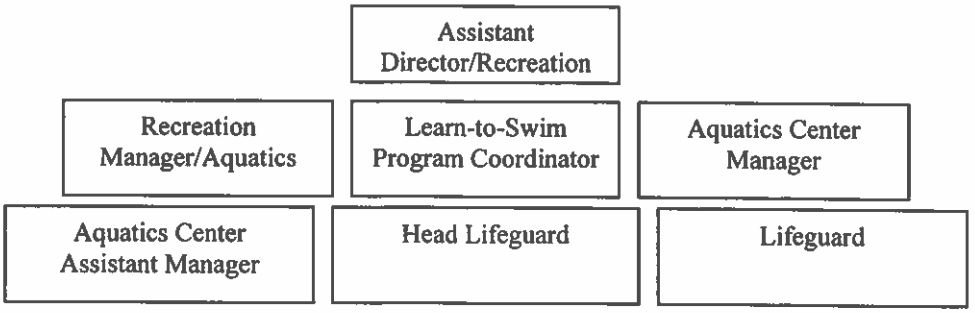
The Dimensions of all pools and structures are as follows:

Structure	Surface	Gallons	Depth
Pools			
Activity Pool	8,467 s.f.	274,828	0'0"-12'0"
Children's Pool	4,710 s.f.	24,426	0'0"-1'6"
Buildings	Surface	Dimensions	
Bathhouse	2,660 s.f.	95' x 28'	
Mechanical Building	825 s.f.	33' x 25'	
Concrete Decking	20,500 s.f. (4")		

Total construction costs include furnishing, equipment, landscaping, and other capital outlay items. Because both facilities were built on existing parkland, the construction costs are considerably less than they might have been if land acquisition had been necessary. In addition, no parking lot construction costs were added to the construction costs for the Central Aquatics Center because ample parking existed. The existing parking area at the Chisholm Aquatic Center was not enough to accommodate the increase in demand created by the new aquatic center. As such, 50 spaces were added to the existing lot and are included in the construction budget mentioned above.

Staffing Levels

The City of Hurst Park and Recreation Department employs a full-time, year-round Recreation Manager who supervises the overall Aquatics program. Additional Parks Division staff handle maintenance of the aquatics centers are a mix of full time and part time staff. The Assistant Director/Recreation, the Recreation Manager and seven Parks Division staff is Certified Pool Operators (CPO's). The management structure for the Aquatics Center is as follows:



During the summer season, each center employs the following full time staff:

1 Pool Manager or Assistant Pool Manager
1 Head Lifeguard
11 Lifeguards
1 Cashier
1 Pool Maintenance Attendant
The Centers also employ approximately 80 lifeguards, 20 Water Safety Instructors (WSI's), 2 Managers and 4 Assistant Managers per season.

Operations and Maintenance

The Parks Maintenance Division is responsible for maintenance of the parks. The City of Hurst Parks and Recreation Department employs 3 full-time and 2 seasonal maintenance staffpersons. The total maintenance budget for the aquatic centers for fiscal year 1999/2000 was $40,805, not including employee salaries.

All pools in each center operate on separate filtration /sanitization systems.

Fees and Membership

	Hurst Residents	Non-Resident
Daily	$1.00	$3.00
Seniors (65 and older)	Free	Free
Children Under 12 months old	Free	Free
Season Passes	$25.00 pp	$75.00 pp

	Hurst Residents	Non-Resident
U.S. Coast Guard life jackets	$1.00 per day	$1.00 per day
Lockers ($3.00 refundable key deposit)	$1.00 per day	$1.00 per day

Both facilities are available for rental, to Hurst residents only, on Saturdays and Sundays from 6:15PM to 8:15 PM for $250 and $100 damage deposit. There are no group rates or evening rates.

Attendance

Attendance at the Central Aquatics Center tripled between 1995, when the Park featured only the "concrete box" pool and 1996 when the aquatics facility opened. The opening of the Chisholm Aquatic Center had an equally dramatic effect on attendance.

	Central Aquatic Center	Chisholm Aquatics Center	Season Total
1995	20,911 (old)	48,746 (old)	69,657
1996	74,101 (new)	40,217 (old)	114,318
1997	60,333 (new)	101,242 (new)	161,575
1998	64,048 *	89,621 **	153,669
1999	57,559	92,914 ***	150,473
2000	49,389	84,923***	134,312

Source: City of Hurst Texas Parks and Recreation Department

Notes:

*Central Aquatics Center closed for three days during the 1998 season for mandatory water rationing

** Chisholm Aquatics Center closed for three days during the 1998 season for mandatory water rationing and for six days during the same season for mechanical upgrades.

*** Chisholm Aquatics Facility opened for four post-season weekends during the 1999 and 2000 summer seasons.

Revenue

The Total Aquatics Division budget for fiscal year 1999/2000 was $534,350. This includes seasonal aquatic employee salaries, maintenance, utilities, chemicals, supplies, uniforms, equipment, etc. The total aquatic division revenue (both facilities) for the past five years is as follow:

1995: $107,000
1996: $212,000
1997: $388,000
1998: $390,000
1999: $410,000
2000: $384,000

2.6 Clarksville Family Aquatic Center - Clarksville, Indiana

Clarksville Indiana is located in Butler County, Indiana and measures approximately 15.8 miles across. The five-acre Clarksville Family Aquatic Center is located within the twenty-acre Colgate Park, a passive green space, in the City of Clarksville Indiana. The City of Clarksville Department of Parks and Recreation operates and maintains the aquatic center, which is open from Memorial Day through Labor Day from 12PM to 6PM weekend and Mondays, from 12PM to 8PM on Tuesdays, Wednesdays and Thursdays and from 12PM to 9PM on Fridays. The $2.6 million aquatic center was designed by Water Technology Inc. took 101 days to construct and opened to the public on July 4th 1995. Funding for the center came from a Bond issue imposed on real estate taxes.

	Number	Percent of Total
Total Population	19,833	
Under 5 years	1,159	5
6 to 17 years old	3,218	16
18 to 24 years old	2,126	11
25 to 54 years old	8,442	43
55 and over	4,888	25
Total Households	8,139	
Family Households	5,323	65
School Enrollment	4512	69% of school population between 1 and 24
Median Family Income	$30,792	
Median Household Income	$25,372	

Facility Amenities

The Clarksville Family Aquatic Center offers the following amenities:

- One Body Slide
- One Inner Tube Slide
- 6-lane Lap Pool
- Zero-Depth (Beach Effect) Pool
- Interactive Wave Features
- Swim Team
- Water Aerobics
- Swim Lessons
- SCUBA Lessons

All of the water features are connected to one 225,000-gallon pool.

The following non-aquatic features are also offered:

- Playground
- Concessions
- Bathhouse/locker room area

Staffing Levels

The City of Clarksville Department of Parks and Recreation employs one year-round aquatic center manager who is a Certified Pool Operator (CPO). The Manager reports directly to the Superintendent of Parks. There are 49 summer employees (including 1 Concessions Manager, 1 Safety Manager and 1 Admissions Manager). The remainder of the staff are lifeguards, swim instructors, food service employees, and cashiers. All lifeguards and Red Cross Certified and are trained by the Aquatic Center Manager.

Operations and Maintenance

The Aquatic Center Manager is responsible for daily operations and maintenance of the park with assistance from the parks maintenance staff. The pool is equipped with a dual sand filter and a PPG chlorine system. There is one filtration and sanitization system for the facility.

Fees and Membership

Fees (which has remained the same since 1998) are as follows:

	Clarksville Resident	Non-Resident
Daily	$3.50	$5.00
Season Pass (individual)*	$35.00	$47.00
Group Rates (>15 persons)	$3.50	$3.50
Facility Rental	$400.00(2 hours) $100.00/hour each additional	
Senior Citizens (60+)	$3.15	$4.50
Inner Tube Rental	Free	Free
Locker Rental	$0.50/day	$0.50/day

Passes are sold on an individual basis only and purchasers receive an additional discount if passes are purchased early. There are no evening rates and no parking fees.

Attendance

The majority of visitors to the Aquatic Center are families as the facility caters particularly to families with children 12 and under. The capacity of the Aquatic Center is 1,100.

Year	Attendance
1998	41,098
1999	47,800
2000	40,600

The unusually high attendance for the summer of 1998 is largely due the lack of rain.

Revenue

For the first summer since its opening, the Clarksville Family Aquatic Center had very little capital expenses. Total 2000 revenue was approximately $280,000 and total operational expenses were approximately $166,000. The profit of $80,000 represents was the best summer the park has seen. A more typical summer would yield a surplus of between $50,000 and $60,000, which is deposited directly into the general fund.
The revenue breaks down as follows:

Daily Admissions:	$117,600
Season Passes:	$65,000
Programs:	$15,000
Rentals:	$7,000
Concessions:	$69,500
Pay Phone and Lockers:	$733

The operational expenses were approximately $166,000 and included:

Phone:	$8,000
Wages:	$80,000
Insurance:	$4,500
Supplies:	$21,400
Food:	$27,000
Water:	$4,000
Electric:	$12,000
Gas:	$4,300
Service Contracts:	$2,550
Sewage:	$2,150

2.7 Water World - Dothan, Alabama

Dothan, Alabama is located in Dothan County. The City of Dothan, Alabama Leisure Services Parks & Facilities runs Water World, a public aquatic center open on weekends in May and full time from Memorial Day to Labor Day. Hours of operation are MWF from 10AM-6PM, TR from 10AM-9PM, Saturday from 10AM-7PM and Sunday from noon to 7PM.

Water World is located within Westgate Park & James W. Grant recreation facility. The 12-acre waterpark is located within the 1950-acre Westgate Park, which is the largest public facility in Dothan Alabama. The Westgate Pool offers its facilities to a parent run swim team.

	Number	Percent of Total
Total Population	53,589	
Under 5 years	3,954	7
6 to 17 years old	10,793	21
18 to 24 years old	4,968	9
25 to 54 years old	22,383	42
55 and over	11,491	21
Total Households	20,685	
Family Households	14,672	71
School Enrollment	14,122	72% of school population between 1 and 24
Median Family Income	$31,871	
Median Household Income	$25,790	

Water World opened in 1980 with a triple flume slide, wave pool, and concessions stand and bathhouses.

Water World includes the following facilities:
- 180-Foot wave pool
- MK Stealth III Water Slide
- Magical Kiddie Pool
- Triple flume 400 ft. water slide
- Video arcade
- Picnic Areas/Pavilions for large groups
- Gift Shop

Staffing Levels

There are five full time staff members at Water World; a General Manager, Operations Manager, Assistant Manager, Aquatics Secretary, and one Maintenance Employee. The Westgate Indoor Pool also has two full time employees- a custodian and one supervisor. There are between 63 and 66 seasonal employees hired to staff the water park during the summer. These employees are staffed as follows:
- Three front officers
- 1 Water Safety Instructor
- 1 Westgate Pool Lifeguard Supervisor
- 23 Lifeguards at Water World
- 2 Head Lifeguards
- 9 Pool Attendants
- 8 Concessionaires
- 1 Concession Manager
- 1 Assistant Concession Manager
- 10 Cashiers

- 10 Ride Attendants
- 3 Aquatics Supervisors

All lifeguards at Water World and at the Westgate Pool are Red Cross Certified and are trained by the Westgate Pool Supervisor. The General Manager, Operations Manager, Westgate Supervisor and Assistant Manager are all Certified Pool Operators with the National Swimming Pool Foundation. The Operations Manager is responsible for all daily operations and maintenance of Water World.

Operations and Maintenance

The three flumes and the water wave pool are equipped with DE filters. All other slides and pools have sand filters. Each pool has its own filtration system located directly adjacent to the pool. The pH of the aquatic facilities is controlled by Soda Ash. The sanitization system is Gas and Bromide.

Fees and Membership

During the summer of 2000, entrance fees were as follows:

	City Resident	
	Adult	**Child**
Daily	$7.00	$5.00
Senior Citizens (60 & above)	Free	
Children under Three	Free	
Group Discount 15-100 101 or more	 $6.30 pp $5.25 pp	 $4.50 pp $3.75 pp
Passes	**5-Day Pass**	**7-Day Pass**
1 person	$50.00	$65.00
2 people	$70.00	$100.00
3 people	$95.00	$130.00
4 people	$110.00	$150.00

Admission was half price on Tuesday and Thursday from 5PM – 9PM. Season passes are available to both individuals and families. Five-day passes are available for Monday through Friday, and seven-day passes are good for the week. An additional $10.00 per person will be charged for each family member over a total of four. Tube passes are available at Water World for $30.00 to those who purchase a season pass.

Water World may be reserved for private parties for a fee of $250.00 per hour (two-hour minimum) for up to 400 people.

III. Analysis of These and Other Comparable Public Aquatic Center Facilities -- Nationwide

This section includes comparison data for public aquatic facilities across the country. The aquatic centers described above are included in this comparison as are other parks to broaden the scope of comparative data. The data is drawn from a survey of public and private aquatic facilities completed by William L. Haralson, & Associates and distributed by the World Waterpark Association.

The research and data collection effort on public facilities across the country reveals several general similarities. The public facilities are almost always operated and maintained by City, Town or County Parks Departments rather than an outside operator. As such, all aspects of the park are overseen by the public management entity and more control over facility operation is retained. The facilities attract primarily Town, City or County residents and offer amenities such as inner tubes, food and beverage and locker rentals. Park attendance is increasing and many Departments are considering expansion of their existing facilities to accommodate increasing demand. The admissions fees are generally quite low and different rates are charged for residents and non-residents. Discount and group package rates are offered to senior citizens and very young children. Many facilities are available for party rental for small and large groups.

3.1 Attendance and Expenditure Data

Table 1 below presents 1996 attendance and expenditure data for a sample of public aquatic facilities throughout the country. Attendance at these parks ranged from 44,534 at Memorial Park in Jefferson City, Missouri, to 129,941 at Summer Waves in Jekyll Island, Georgia. Table 1 also provides a comparison of per capita expenditure data for the public aquatic facilities. Per capita expenditures are presented in seven categories including admission, concessions (food/drink), inner tube rental, etc. The parks derive most of their revenue from admissions charges and not from the other amenities provided. Total per capita spending ranges from under $2.00 at Highlands Park in Westerville, Ohio to almost $9.00 at Summer Waves on Jekyll Island, Georgia. While the great disparity between the per capita expenditures can be attributed to several factors (the size of the park, the entertainment mix, etc.), it seems that the aquatic facilities are not capitalizing on their potential to derive more revenue from concessions, rentals and other available amenities.

TABLE 1
SUMMARY OF ATTENDANCE AND EXPENDITURE DATA FOR SELECTED PUBLIC AQUATIC FACILITIES
(1996 Season)

Facility	Attendance	Per Capita Expenditures							
		Admission	Food/Drink	Merchandise	Games/ Arcade	Tube Rental	Locker Rental	Other	Total
Cedarsburg Community Pool – Cedarsburg, WI	72,657	$1.97	$0.08						$2.05
Central Aquatics Center – Hurst, TX	74,100	$1.66	$0.06				$0.01	$0.13	$1.86
Clarksville Aquatic Center – Clarksville, IN	49,726	$3.00	$1.13					$0.25	$4.38
Crystal Springs - East Brunswick, NJ	78,000	$7.27	$0.14				$0.01	$0.24	$7.66
Highland Park – Westerville, OH	46,000	$1.73	$0.13						$1.86
Island Oasis, Grand Island, NE	87,536	$2.70	$0.86	$0.04		$0.45		$0.09	$4.14
Koch Park- Florissant, MO	47,712	$3.89	$1.31				$0.06		$5.26
Memorial Park – Jefferson City, MO	44,534	$2.47	$0.81				$0.05	$0.35	$3.68
Splash Zone – Charleston, SC	106,890	$5.33	$1.42				$0.12		$6.87
Summer Waves – Jekyll Island, GA	129,941	$8.64	$0.22	$.71	$0.05		$0.45		$10.07
Summit Hall – Gaithersburg, MD	90,000	$2.73	$1.00	$0.46			$0.08		$4.27
Water World – Dothan, AL	59,406	$4.07	$1.10	$0.10	$0.06	$0.61	$0.06		$6.00
Wave Water Park – Vista, CA	87,685	$7.21	$1.80	$0.12			$0.24	$0.82	$10.19

Admission Rates

Table 2 below presents 1996, 1997 general admission rates for public aquatic facilities for adults and children. The rates for admission vary widely based on the size of the facility, the amenities offered, the subsidy available from the public management entity and the rate assessed as fair for potential visitors. The Table shows that admission rates vary widely from $1.00 at the Central Aquatics Center in Hurst, Texas to $17.95 at Water World in Highlands Park, Ohio. Admission rates stayed largely the same between 1996 and 1997 seasons.

TABLE 2
COMPARISON OF ADMISSION RATES AT SELECTED PUBLIC AQUATIC FACILITIES
(1996 Season)

Facility	Adult General Admission			Child General Admission		
	1996	1997	Change (%)	1996	1997	Change (%)
Cedarsburg Community Pool – WI	$3.00	N/A	N/A	$2.00	N/A	N/A
Central Aquatics Center – TX	$1.00	$1.00	0.00%	$1.00	$1.00	0.00%
Clarksville Aquatic Center - IN	$3.00	$3.00	0.00%	$3.00	$3.00	0.00%
Crystal Springs – NJ	$12.00	$13.00	8.33%	$10.00	$10.00	0.00%
Highland Park – OH	$3.50	$4.00	14.29%	$2.50	$2.50	0.00%
Island Oasis – NE	$4.00	$4.00	0.00%	$3.00	$3.00	0.00%
Koch Park – MO	$3.50	$3.50	0.00%	$2.50	$2.50	0.00%
Magic Waters – IL	$9.75	$11.95	22.56%	$9.75	$10.95	12.31%
Memorial Park – MO	$3.50	$4.00	14.29%	$2.50	$3.00	20.00%
NRH_20 – TX		$12.95			$10.95	
Splash Zone – SC	$6.95	$6.95	0.00%	$5.95	$5.95	0.00%
Summer Waves – GA	$11.95	$12.50	4.60%	$9.95	$10.50	5.53%
Summit Hall – MD	$3.50	$3.75	7.14%	$2.50	$2.75	10.00%
Water World – AL	$5.50	$6.50	18.18%	$4.00	$5.00	25.00%
Water World – Hyland Hills, CO	$16.95	$17.95	5.90%	$15.95	$16.95	6.27%
Wave Water Park – CA	$8.75	$10.00	14.29%	$6.25	$7.00	12.00%

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

3.2 Composition of Public Aquatic Facility Visitors

Table 3 presents demographic breakdowns for attendants at public aquatic facilities. As expected, the majority of public water park attendants are families except at Bunker Hill where the largest segment is represented by teens. The attendance percentages help water parks understand whether their present marketing strategies are effective in attracting their desired audience and where further marketing efforts should be targeted. In addition, these demographic breakdowns provide valuable information on which additional features the park should offer to satisfy its current population as well as additional features that could be installed to attract new underrepresented groups.

TABLE 3 ATTENDANCE BY AGE GROUPS AT SELECTED PUBLIC AQUATIC FACILITIES (1996 Season)				
Facility	**Families**	**Teens**	**Adults Only**	**Total**
Cedarsburg Community Pool - WI	75%	15%	10%	100%
Central Aquatics Center - TX	80%	10%	10%	100%
Chesapeake Beach Water Park –MD	45%	39%	16%	100%
Crystal Springs – NJ	96%	2%	2%	100%
Highland Park – OH	96%	2%	2%	100%
Island Oasis – GA	57%	25%	18%	100%
Koch Park – MO	50%	35%	15%	100%
Memorial Park – MO	65%	25%	10%	100%
Splash Zone – SC	75%	15%	10%	100%
Summit Hill – MD	60%	20%	20%	100%
Water World – AL	60%	30%	10%	100%
Water World – Hyland Hills – CO	52%	30%	18%	100%
Wave Water Park – CA	42%	24%	34%	100%

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

Table 4 presents attendance percentages at selected public aquatic facilities according to ticket type. Most facilities derive the bulk of their revenue from general admission fees, although the Cedarsburg Community Pool and Crystal Springs reported that season passes were the largest category of ticket sales.

TABLE 4 COMPOSITION OF ATTENDANCE AT SELECTED PUBLIC AQUATIC FACILITIES (1996 Season)						
Facility	General Admission	Season Passes	Groups	Discounts/ Promotions	Comp	Total
Cedarsburg Community Pool – WI	43%	57%	0%	0%	0%	100%
Central Aquatics Center – TX	96%	3%	0%	0%	1%	100%
Chesapeake Beach Water Park – MD	77%	12%	5%	0%	6%	100%
Clarksville Aquatic Center – IN	67%	28%	4%	0%	1%	100%
Crystal Springs – NJ	31%	60%	8%	1%	0%	100%
Island Oasis – NE	51%	44%	4%	0%	0%	100%
Koch Park – MO	79%	21%	0%	0%	0%	100%
Memorial Park – MO	98%	0%	0%	0%	2%	100%
Splash Zone – SC	71%	10%	11%	1%	6%	100%
Summer Waves – GA	55%	3%	26%	5%	12%	100%
Summit Hall - MD	59%	25%	14%	0%	2%	100%
Water World – AL	57%	9%	10%	14%	9%	100%
Water World – Hyland Hills – CO	58%	3%	14%	24%	1%	100%
Wave Water Park – CA	83%	1%	8%	3%	5%	100%

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

Table 5 presents geographic origin of attendance. The figures reflect the distribution of population surrounding each facility. The majority of park attendees come from within 10 miles of the aquatic center. It should be noted that the numbers might be slightly skewed resulting from the tendency of those who live close to the facility to visit more often.

TABLE 5
ORIGIN OF ATTENDANTS AT SELECTED PUBLIC AQUATIC FACILITES
(1996 Season)

Facility	0 to 5 Miles	5 to 10 Miles	10 to 15 Miles	15 to 25 Miles	25 to 50 Miles
Cedarsburg Community Pool – WI	75%	10%	5%	5%	5%
Central Aquatics Center – TX	60%	20%	10%	5%	5%
Chesapeake Beach Water Park – MD	26%	23%	18%	17%	16%
Clarksville Aquatic Center – IN	79%	14%	7%	0%	0%
Crystal Springs – NJ	85%	10%	5%	0%	0%
Highland Park – OH	65%	33%	2%	1%	0%
Koch Park – MO	45%	30%	15%	5%	5%
Memorial Park – MO	65%	20%	10%	4%	1%
Splash Zone – SC	50%	25%	15%	5%	5%
Summer Waves – GA	0%	5%	15%	30%	50%
Summit Hall – MD	15%	60%	10%	10%	5%
Water World – AL	20%	20%	10%	10%	10%
Water World – Hyland Hills – CO	30%	30%	25%	10%	5%
Wave Water Park – CA	29%	40%	25%	6%	0%

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

IV. Analysis of Private/Commercial Aquatic Center Facilities -- Worldwide

This section presents data on private/commercial water parks throughout the country and, in some cases, in other countries. The intent is to represent a comparison of the attendance figures, admission fees, per capita expenditures, types of sales and distribution of visitors at private facilities and public facilities. Unlike the public facilities, the privately run parks surveyed were assigned letters to protect their confidentiality. Some private facilities were reluctant to disclose financial statements presented later in this section and were therefore assured anonymity in the survey. The section is organized as follows.

4.1 Attendance and Expenditure Data

Table 6 presents per capita expenditures for sixteen commercial water parks in the United States and five foreign countries. Also included in the Table are attendance and admission rates to provide a better understanding of the size and the extent of the recreational activities offered. The per capita expenditure data are presented as percentages largely because of the reluctance of the private operators to disclose detailed financial information. Expenditure data are presented for the same categories as for the

public aquatic facilities including admissions, merchandise, games/arcades and locker rental. The commercial aquatic facilities, much like the public facilities, derive the majority of their revenue from admissions fees. As a percent of total spending, admissions range from 58.1 percent for Park F to 94 percent for Park P. The second largest expenditure category for most parks is the food/drink category, which ranges from three percent for Parks A and P to as much as 31.7 percent at Park F.

TABLE 6
SUMMARY OF ATTENDANCE AND EXPENDITURE DATE FOR SELECTED COMMERCIAL AQUATIC FACILITIES

Facility & Location	Attendance	Admission Rates		Per Capita Expenditures							
	(000's)	Adult	Child	Admission	Food/Drink	Merchandise	Games/Arcade	Tube Rental	Locker Rental	Other	Total
Park A – USA	40	$ 9.95	$ 9.95	89%	3%	0%	2%	5%	1%	0%	100%
Park B – USA	70	$ 12.95	$ 10.95	73%	16%	3%	1%	4%	2%	1%	100%
Park C – USA	161	$ 13.95	$ 10.95	65.6%	20.6%	3.5%	1.0%	5.0%	2.0%	2.3%	100%
Park D – USA	166	$ 17.95	$ 17.95	70%	15%	10%	0%	0%	5%	0%	100%
Park E – USA	170	$ 11.95	$ 8.95	65%	23%	8%	0%	2%	2%	0%	100%
Park F – USA	175	$ 13.95	$ 13.95	58.1%	31.7%	3.6%	3.6%	0%	3%	0%	100%
Park G – USA	253	$ 18.00	$17.00	58.7%	18%	8%	0.1%	6%	3%	6.2%	100%
Park H – USA	300	$ 12.95	$ 10.95	59.6%	24.6%	6.2%	0.8%	3.5%	2.1%	3.2%	100%
Park I – USA	314	$ 15.99	$ 12.99	66%	16%	4%	1%	6%	6%	1%	100%
Park J – USA	323	$ 17.95	$ 12.95	73.8%	15.3%	3.5%	0.5%	1.6%	2.5%	2.8%	100%
Park K – Australia	130	20Aus	18Aus	75%	18%	0.5%	2.5%	0%	1%	3%	100%
Park L – Australia	240	22Aus	18Aus	73%	22%	2%	1%	0%	0.5%	1.5%	100%
Park M – GB	162	4.9GB	4.9GB	88%	10%	0%	0%	0%	0%	2.0%	100%
Park N – Indonesia	175	$ 11.00	$ 5.50	67.5%	22.4%	6.8%	0%	0%	3.3%	0%	100%
Park O – Korea	291	50K	50K	70%	15%	0%	0%	0%	3%	12%	100%
Park P – New Zealand	210	$3.50	$2.00	94%	3%	2%	0%	0%	1%	0%	100%

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

Table 7 compares attendance figures for the 1995 and 1996 summer seasons for commercially run aquatic facilities in the United States. The parks are listed in order of increasing attendance. Declines in attendance can sometimes be attributed to persistent severe weather conditions and water shortages or droughts that have occurred more frequently in certain parts of the country over the past 10 years. Overall, however, the parks experienced an increase in attendance of two percent over the 1995 season.

A comparison of attendance data from the public and private aquatic facilities indicates that the seasonal visitation of public facilities is comparable to the small and mid range private facilities.

TABLE 7
ATTENDANCE AT PRIVATE WATER PARKS: 1995-1996
(In thousands)

Facility	1995	1996	Change
Park A	68	69	1%
Park B	71	70	-1%
Park C	82	77	-6%
Park D	125	125	0%
Park E	120	130	8%
Park F	152	161	6%
Park G	152	162	7%
Park H	157	167	6%
Park I	156	175	12%
Park J	195	210	8%
Park K	236	235	0%
Park L	270	253	-6%
Park M	243	291	20%
Park N	350	300	-14%
Park O	326	314	-4%
Park P	287	323	13%
Park Q	451	413	-8%
Park S	628	657	5%
Total	4,069	4,132	

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

4.2 Composition of Private Aquatic Facility Visitors

Table 8 presents attendance by selected age groups. As with the public water parks, families account more than half of the total commercial water park attendants. There were, however, some exceptions. Park G reported that 82 percent of its visitors were adults. Parks H and I reported that families represented only two and five percent, respectively, of total attendance.

TABLE 8
ATTENDANCE BY AGE GROUPS AT SELECTED COMMERCIAL WATER PARKS
(1996 Season)

Facility	Families	Teens	Adults Only	Total
Park A	70%	20%	10%	100%
Park B	70%	24%	6%	100%
Park C	85%	8%	7%	100%
Park D	42%	24%	24%	90%
Park E	58%	14%	28%	100%
Park F	38%	25%	17%	80%
Park G	10%	8%	82%	100%
Park H	2%	48%	48%	98%
Park I	5%	17%	78%	100%
Park J	47%	18%	35%	100%
Park K	30%	10%	60%	100%
Park L	54%	22%	24%	100%
Park M	60%	15%	25%	100%
Park N	70%	24%	6%	100%

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

Table 9 presents the composition of ticket sales at thirteen commercial water parks. The ticket mix of a water park can be a good indication of the success of their facilities and their marketing strategy, and the environment and demographics of the surrounding area. There does not seem to be any true similarities in ticket sale patterns among the thirteen parks included in the survey. Some parks reported more than half their ticket sales as general admissions, while other park reported less than 20 percent of total attendance.

TABLE 9
COMPOSITION OF TICKET SALES AT COMMERCIAL AQUATIC FACILITIES
(1996 Season)

Facility	General Admission	Season Passes	Groups	Discounts/ Promotions	Complimentary	Total
Park A	20%	12%	35%	6%	7%	80%
Park B	17%	5%	5%	59%	14%	100%
Park C	17%	1%	60%	14%	8%	100%
Park D	45%	6%	9%	28%	12%	100%
Park E	38%	7%	41%	8%	6%	100%
Park F	12%	26%	33%	25%	4%	100%
Park G	13%	44%	13%	23%	7%	100%
Park H	28%	19%	26%	19%	8%	100%
Park I	79%	0%	1%	19%	1%	100%
Park J	44%	0%	31%	17%	8%	100%
Park K	69%	12%	5%	12%	2%	100%
Park L	60%	0%	38%	0%	2%	100%
Park M	70%	8%	7%	15%	0%	100%

Source: World Waterpark Association; and William L. Haralson & Associates, Inc.

V. Analysis of Public and Private/Commercial Aquatic Center Facilities

This section presents a comparison of public and private aquatic facilities. The water parks are analyzed based on total attendance, attendance by age groups, admission fees, and composition and origin of attendants. The comparison helps determine an appropriate benchmark upon which to structure the proposed aquatic facility in Westchester County.

As expected, the comparison reveals commercial water parks have higher attendance, are typically much larger and admission is typically more expensive than public aquatic facilities. The distribution of attendance by age group at private facilities varies more than at public facilities. More specifically, attendance at public aquatic centers is primarily families with a few parks attracting a high number of teen visitors. Attendance at private facilities, while also dominated by families, has many teens and adults. This can be attributed to the nature of the visitor and the type of trip. Private amusement and water parks are vacation and trip destinations while public water parks tend to cater largely to local residents. Therefore, the wider distribution and longer distances traveled to the private water park skews the distribution of attendants to represent more adult and teen visitors than would a public water park. It is, therefore, assumed that the proximity of a large private facility to a public facility would not be direct competition. The closest very large private aquatic facility to Westchester County would either be in Long Island or New Jersey and it is unlikely that these would serve as direct competition to a new public facility. Due to the issue of confidentiality of the private water parks, demographics data for these facilities were not collected.

VI. Demographics Analysis of Public Aquatic Facility Users

This section provides more detailed demographic data on the towns, cities and counties offering public aquatic facilities discussed in detail in Section III of this chapter.

6.1 Population Distribution by Age Group

Despite the differences in climate, population, topography and economics between the facilities, the distribution of population by age group is largely the same. Table 10 presents population by age group for ten different geographic areas nationwide. All of these towns and cities offer publicly sponsored aquatic facilities. All of the areas surveyed, with the exception of Pocatello, Idaho, have a lot of children and a lot of residents under 44 years old. These are the groups identified to be the most likely users of water parks. The demographics also support the assertion that the majority of the visitors will come from within 1-10 miles of the water park.

TABLE 10 AGE DISTRIBUTION						
	0-5 Years	5-17 Years	18-44 Years	45-59 Years	60+ Years	Total
Westerville, OH	2,045	6,759	13,506	4,580	3,379	30,269
Gaithersburg, MD	3,515	6,243	21,624	4,820	3,340	39,542
North Richland Hills, TX	3,956	8,806	21,979	6,473	4,681	45,895
Pocatello, ID	3,935	10,014	5,652	19,900	6,579	46,080
Charleston, SC	5,756	12,148	39,268	9,754	13,488	80,414
Grand Island, NE	3,086	7,984	15,753	5,084	7,479	39,386
Hurst, TX	2,452	5,937	14,294	6,344	4,547	33,574
Clarksville, IN	1,159	3,218	8,421	3,022	4,013	19,833
Dothan, AL	3,954	10,793	21,724	7,929	9,189	53,589
New Rochelle, NY	4,879	14,399	16,665	16,054	11,185	63,182
Hartsdale, NY	623	1,294	3,320	2,267	2,326	9,830
Yonkers, NY	13,702	38,664	72,755	33,488	37,467	196,076

Note: For Westchester County, age cohorts at 0-5, 5 to 19, 20-44, 45-59, 60+

6.2 Family Household Income

Research indicates that the majority of water park visitors are families. As such, Table 11 presents 1989 family household income for cities/towns in which public aquatic facilities are located.

Throughout the towns, the majority of family households have an annual income between $15,000 and $34,000 and $35,000 and $75,000. A small percent (less than 5 percent) of the households report an income over $150,000.

TABLE 11 1989 FAMILY HOUSEHOLD INCOME							
	< $5,000	$5000 to $14,999	$15,000 to $34,999	$35,000 to $74,999	$75,000 to $149,000	>$150,000	Total
Westerville, OH	60	294	1442	4338	1719	168	8021
Gaithersburg, MD	176	608	2140	4914	1849	90	9777
N.Richland Hills, TX	164	821	3829	6708	1346	124	12992
Pocatello, ID	506	1879	4502	4308	565	128	11888
Charleston, SC	1436	2940	5703	6589	1668	633	18969
Grand Island, NE	305	1358	4591	3696	392	45	10387
Hurst, TX	154	722	2526	4875	1373	122	9772
Clarksville, IN	96	743	2378	1971	170	16	5374
Westchester County, NY	10925	34,988	68,136	113,337	66,819	25,452	319,657

VII. Financial Analysis of Public Aquatic Facility Users

In an article featured in the March/April 1999 issue of Aquatics International, Ken Ballard, partner at Ballard, King and Associates in Aurora, Colorado noted that ten or fifteen years ago many public facilities undercharged for their services. The managing entity would survey the lowest income group and set their admission prices accordingly. Now, most government agencies simply do not have the resources required to subsidize facilities at the levels of the past. As such, rather than arbitrarily setting fees at the lower levels, facilities need to be more market sensitive to what the larger majority of people can afford and offer programs and discounts for people that cannot afford the higher fees.

Before establishing the prices at the proposed facility, it is essential to establish the indirect and direct expenses for operating and maintaining the facility. Indirect expenses include staff salaries, benefits, training, taxes, utilities, insurance, supply and maintenance costs, promotional and advertising costs. Direct expenses include special equipment, instructors (if not on staff), and promotional material.

The facility could have a market driven fee structure to generate revenue to offset most of the operating expenses. Some facilities surveyed use a "cost-per-participant" formula to determine the admission fees factoring all expenses, maintenance costs and salaries to determine total operating expenses and then figures the cost per participant based on attendance from the previous year. The park then adjusts this number to reflect the potential market value of an admission ticket. This assures that the operating expenses are covered and additional funds are available for maintenance of the park.

Group, business and private parties can also provide a tremendous source of revenue. In some parks surveyed, the revenue derived from these services can represent almost 50 percent of park revenue. As such, it is important to set these group prices at a fair level. It should not be too low so as to render it cost ineffective for the park but it should also not be so high that potential groups turn elsewhere.

The proposed park could also offer special evening-only passes or day or guest passes. Other group or incentive days can include police, fire and EMT personnel discounts, volunteer discount day, Grandparents day, and County employee days' etc. It is assumed that the fee structure for the water park admissions will charge one rate for residents with a park pass, a rate for Westchester residents without a park pass and another rate for non-residents. Different rates will also be charged for the elderly and for young children. As recommend above, group and party rates will be established based on market prices.

William L. Haralson and Associates has determined through experience that "one hour of entertainment is worth about $3.50 per person." It can also be assumed that the longer people stay at a park, the more they will spend on concessions and other park offerings. As such, the park should provide incentives for their visitors to stay including a variety of meals. The park can offer breakfast-type foods in the morning including coffee and

muffins, several options for lunch, and a variety of afternoon snacks (including healthy snacks of fruit and nuts). The park should sell sunscreen and batteries and insect repellent. Park amenities should include comfortable lounge chairs as well as bathroom, changing, locker rental and shower facilities.

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9. Haralson, William L. "1996 World Water Park Survey – Public and Private Sectors." *Splash Magazine* May 1997: 40- 43
10. "Jekyll Island Convention and Visitors Bureau – Travel File" - http://www.jekyllisland.com/
11. NRH20 - http://www.nrh20.com
12. Orr, Jim "This Community Is All Wet" *Aquatics International.* March 2000: 35-38.
13. Turner, Stuart & Associates: *The Saxon Woods Park Improvements Draft Environmental Impacts Statement (DEIS).* February 1995.
14. "Summit Hall Farm Park – Water Park (For Kids)" - http://www.washingtonpost.com
15. Swartz, Christopher "NRH_20." Dec. 1995
16. http://themeparks.about.com/travel/themeparks/cs/waterparks/index.htm
17. "Town of Clarksville, Indiana – Parks and Recreation – 2000 Summer Guide – Clarksville Family Aquatic Center" - http://town.clarksville.in.us
18. Willison, Sharon. Aquatic Facility Manager. City of Westerville, Parks and Recreation.
19. "World Waterparks Association – Official Member Website" - http://www.waterparks.org

List of Aquatic Facility Experts and Products Providers

CONSULTANTS

1. USAquatics, Aquatic Engineering – consultation, design and project construction management for renovations, expansion or new construction of multi-use swimming pools, aquatic facilities and aquatic parks - 2355 Polaris Lane North #110, Plymouth, MN 55447. p. 612 745 9016, f. 612 745 9243
2. Brinkley Sargent Architects
3. Counsilman/Hunsaker & Associates – Design of aquatic attractions and filtration systems
4. Jeff Ellis & Associates, Inc. – Risk Management for Aquatic Parks; Lifeguard Training
5. William L. Haralson – President, William L. Haralson & Associates
6. John Fussner – American Specialty Risk Management Services - Roanoke, VA
7. Wally James - ConServ Associates, Powder Springs Georgia
8. Kent Williams – Kent Williams Consulting, Newcastle, California
9. Randy Thomas – Randy Thomas & Associates, Palm Springs, CA
10. Michael Holtzman – President, Profitable Food Facilities – Operating profitable waterpark food services, San Diego, CA

EQUIPMENT

1. Splashtacular, Inc. – Provided of Water Slides, Theme Pools, Aquatic Recreation
2. Judith Leblein- Water Technology, East Brunswick, New Jersey
3. Whitewater West Industries
4. Great Wave
5. NBGS Aqua Express

CERTIFICATION

1. National Swimming Pool Foundation – Certified Pool Operators Course (CPO)
   1083 Gulfdale, Suite 300
   San Antonio, Texas 78216
   210 525 1227
2. USAquatics – Aquatic Facility Operator Course (AFO)
   2355 Polaris Lane North #110
   Plymouth, MN 55447
   612 745 9016
3. National Aquatic Section – National Recreation and Park Association – Aquatic Facility Operator Course (AFO)
   Great Lakes Regional Office
   650 West Higgins Road
   Hoffman Estates, Illinois 60195
   847 843 7529
4. National Aquatic Safety Company (NASCO) – Lifeguard Instructor Program

OTHER RESOURCES

1. World Waterpark Association – www.waterparks.com

PUBLIC FACILITIES

1. The Pool at Highlands Park
   City of Westerville
   Department of Parks and Recreation
   64 East Walnut Street
   Westerville, Ohio 43801
   614 901 6500
   www.ci.westerville.oh.us
2. Water Park at Bohrer Park, Summit Hall Farm Park
   510 South Frederick Avenue
   Gaithersburg, MD 20877
   301 258 6445
   waterpark@ci.gaithersburg.md.us
3. NRH20
   817 427 6500
4. Crystal Springs
5. Splash Island/Splash Zone
   Charleston County Park and Recreation Commission
   861 Riverland Drive
   Charleston, SC 29412
   843 762 2172

   Splash Island
   Palmetto Islands County Park
   444 Needlerush Parkway
   Mt. Pleasant, SC
   843 884 0832

   Splash Zone
   James Island County Park
   871 Riverland Drive
   Charleston, SC 29412
   843 795 7275
6. Island Oasis Water Park
   City of Grand Island, Department of Parks & Recreation
   City Hall
   100 East First Street
   Box 1968
   Grand Island, Nebraska 68802
7. Summer Waves
   912 635 2074
8. Central Aquatics Center/Chisholm Aquatic Center
   City of Hurst

Department of Parks and Recreation
700 Mary Drive
Hurst Texas
817 788 7320

Central Aquatics Center
715 Mary Drive
Hurst Texas
817 788 7327

Chisholm Aquatics Center
2200 Norwood Drive
Hurst Texas
817 788 7250

9. Clarksville Family Aquatic Center
City of Clarksville Parks and Recreation
2000 Broadway, Suite 221
Clarksville, IN 47129
812 283 5313

10. Water World
City of Dothan Alabama
Leisure Services Parks & Facilities
Suite 107 Roy Driggers Municipal Building
126 North Saint Andrews Street
Dothan, Alabama 36303
334 793 0191

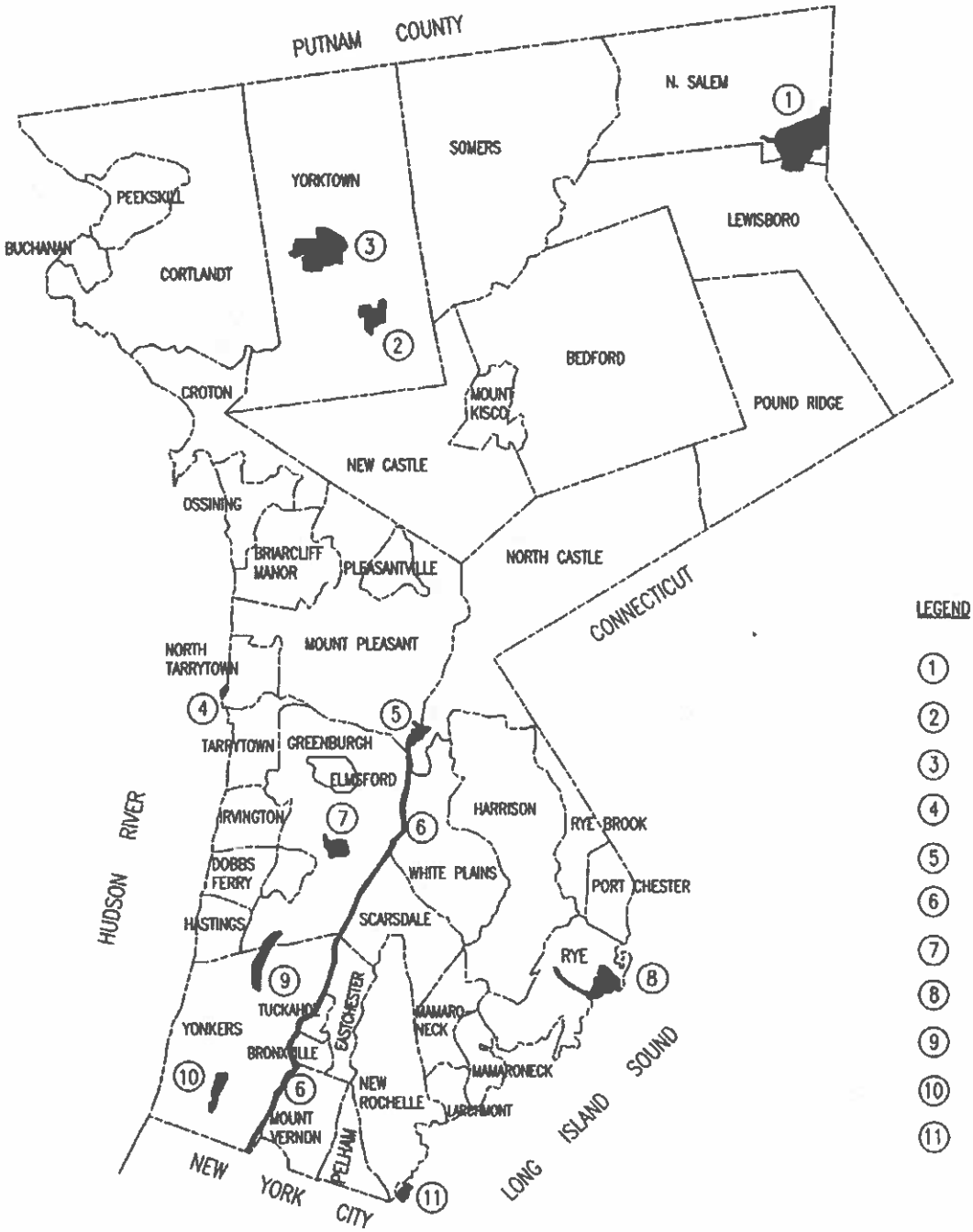
Water World
501 Recreation Road
Dothan, Alabama 36302
334 793 0297

PARKS
WESTCHESTER COUNTY

GOLF STUDY

GOLF STUDY

PARKS
WESTCHESTER COUNTY



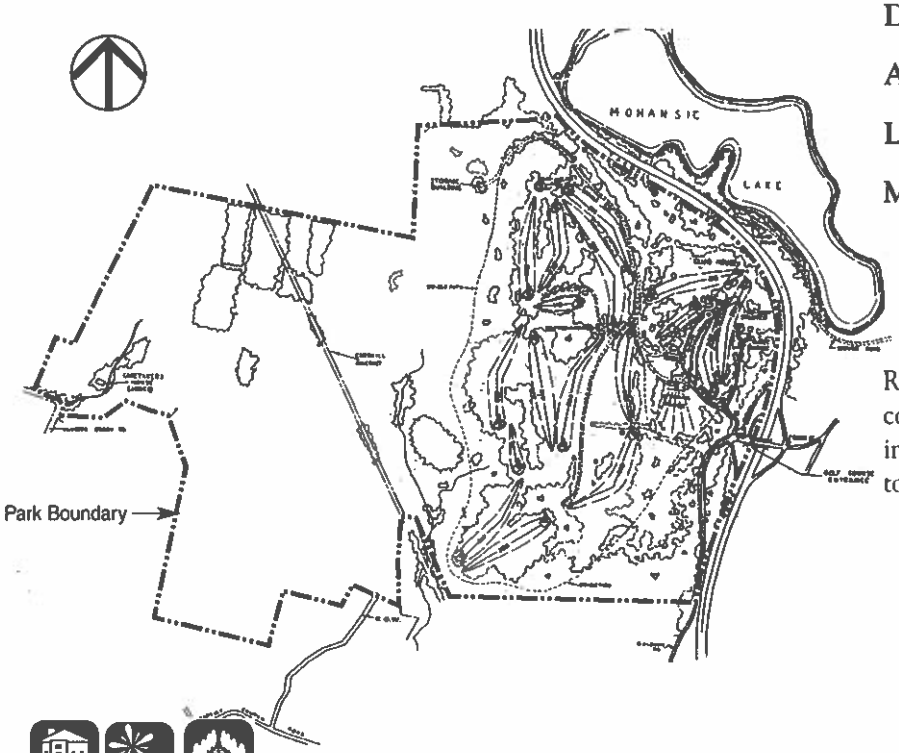
LEGEND

1	MOUNTAIN LAKES PARK
2	LOCH LEDGE GOLF COURSE
3	MOHANSIC GOLF COURSE
4	KINGSLAND PARK
5	KENSICO DAM PLAZA
6	BRONX RIVER PARKWAY
7	RIDGE ROAD PARK
8	PLAYLAND PARK
9	SPRAIN RIDGE PARK
10	TIBBETTS BROOK PARK
11	GLEN ISLAND

LOCATION PLAN
NOT TO SCALE

MOHANSIC PARK AND GOLF COURSE

PARKS
WESTCHESTER COUNTY



Map

Date Acquired: *1922*

Acreage: *863 Acres*

Location: *Yorktown*

Major Activities:
- *golf*
- *cross country skiing*
- *sledding*
- *hiking*

Rolling landscape and moderately steep slopes comprise this 18 hole golf course. The remaining landscape is wooded with moderately steep topography.

Main Club House

Pro Shop

Snack Bar and Comfort Station at Tenth Tee

One of Several Maintenance Barns

I. Introduction

1.1 The Need for Public Golf Facilities

The need for public golf facilities in Westchester County is well documented. Over the past decade, numerous studies have been completed to analyze the supply of and demand for public golf facilities; to outline remedies to the increasing gap between supply and demand; and to target specific solutions and immediate action.

County staff have conveyed to our team the basic deficiencies: Westchester County needs additional public golf facilities to accommodate over 400,000 unplayed golf rounds/year; existing County courses have reached their peak utilization; and, more specifically, the County needs to accommodate senior play and the demand for practice facilities. The benefits of providing new facilities would out-weight the costs considering that golf courses tend to generate revenue for public agencies. In addition, the development of practice facilities may help to decrease the demand for tee times on already over-burdened County facilities and generate additional revenue.

The following studies have been completed and provide testimony to county officials of the ever-increasing need for new public golf facilities. To WCPRC staff, the implications (maintenance requirements, unmet demand, etc.) of today's shortfall are apparent every day. The results of each documented study support WCPRC's staff common experience in the operation and maintenance of County facilities.

A Survey of Golfers Who Use the Public Courses of Westchester County: *prepared by the Public Opinion Learning Laboratory of Westchester Community College; sponsored by Westchester County under the program of the State University of New York (1990).* This study revealed that "the vast majority of golfers who use the five Westchester public courses believe there was (is) a need for an additional County-run golf course. 62% of those surveyed said that they would use such a facility and strong interest was demonstrated by Mohansic Golf Course users in northern Westchester County.

Report of the Real Estate Work Group Subcommittee on Golf Courses to the County Executive, Executive Summary. *(1994).* The purpose of the subcommittee was to develop criteria for the evaluation of potential golf course acquisitions by the County; to apply these criteria; and to make a recommendation to the County Executive's Office on how to proceed. The subcommittee recommended the following:

- purchase the IBM Hudson Hills site in New Castle and restore it as an 18 hole golf course (the purchase is complete and the renovation is under way);
- purchase the Loch Ledge site in Yorktown to modify it as a Par 3 Executive golf course and practice area; and
- pursue additional means to preserve open space and existing golf courses (private and

semi-private).

The subcommittee's report recommended that the County ensure the continuation of existing golf courses and explore the development of new ones in light of the following: 400,000 unmet annual golf rounds; the decreasing amount of vacant land; and the possibility of existing courses (private or semi-private) ceasing operation.

Golf Market Analysis Update for Westchester County Department of Parks, Recreation and Conservation, *prepared by NGF Consulting, Inc., for Westchester County (1995).* This report concluded that Westchester County is not unlike many other urban areas. Westchester County suffers from a lack of public golf courses and demand is unmet. This study revealed that "the level of public golf demand is well in excess of public golf supply in the immediate northern Westchester area, and that this gap between demand and supply is even greater in the southern part of the County. The study revealed that the greatest impediment to new course construction are land costs and high demand for residential and commercial land. The report alluded to the availability of Hudson Hills and the expansion of Mohansic Golf Course (18-hole addition) and the fact that if these two additional facilities were available that a countywide deficiency would still exist.

1.2 Purpose of this Study

This Phase II study sets out to address the need for new public golf facilities. As part of this effort, the initial task was to identify and investigate the availability of suitable parcels of undeveloped land to meet the needs outlined in the report prepared by the Real Estate Work Group Subcommittee.

After numerous inquiries, the inability to identify undeveloped properties with the potential for future public golf use limited the discussion of site-specific options to two locations. This study thus focuses on the potential expansion of an existing public golf facility (Mohansic Golf Course) and the purchase and renovation of an existing private facility for public use (The Sanctuary, formerly known as Loch Ledge Golf Course). The plan to meet the County's immediate/short-term golf needs includes the development of these two facilities with the following actions:

- Purchase The Sanctuary/Loch Ledge Golf Course and renovate/reconfigure it into a regulation 9-hole course with an additional teaching and practice area; and
- Expand the existing Mohansic Golf course from 18 holes to 27 holes and provide additional practice and parking facilities.

Long-term improvement recommendations include maintaining a countywide focus on and commitment of resources to the preservation of open space and existing private and semi-private golf facilities. During the initial site selection phase of this golf study, Vollmer Associates inquired with County staff regarding the possibility of operating a golf facility in Putnam County where suitable land could be available. This facility would be operated, financed and maintained

by both Counties with benefits to residents in each, particularly northern Westchester County. Although this study did not pursue this option further, it should remain a future consideration. Use of existing park land in Westchester County was considered including V.E. Macy Park, and Maple Moor and Sprain Lake Golf Courses. The area that was initially considered at V.E. Macy Park is currently being developed for active recreation use. Maple Moor and Sprain Lake Golf Courses were considered by County staff for the addition of practice facilities, however, due to land area constraints the options were not included in this study.

1.3 Program Needs

The following contains general site consideration and design criteria for the development of golf facilities. This study focuses on specific improvements and the following information is provided as a guideline for new and existing facility evaluation:

Location considerations: • access to major roadways • natural buffers • proximity to populated areas (southern and northern Westchester County) • compatibility with adjacent land uses
Area and Site Requirements: • 18 hole regulation course requires 150 acres (minimum)and 175 acres (preferred) • executive style course requires 80 acres (minimum) • par 3 course requires 40 acres (+/-) • pitch and putt requires 7-8 acres • gently rolling topography • well-drained soil • access to potable water supply
Infrastructure considerations: • potable water supply (approx. 100,000 gallons/day for an 18-hole irrigation system) • sufficient electric service • natural and manmade drainage systems
Environmental Considerations: • evaluate watershed impacts and regulatory requirements • conduct a Phase I environmental assessment for land areas to be impacted and for structure demolition • avoid wetlands and/or mitigate impacts • control fertilizer use • implement and maintain sediment and erosion control measures • maintain contiguous woodlands and avoid fragmentation • enhance wildlife habitat in perimeter woodlands
Practice Driving Range Amenities: • 300 yd. depth minimum, 400 yd depth preferred • 25 tee positions (decking is an option) • parking lot to accommodate 1.2 spaces/tee • design for year-round use (provide heat and wind protection) • provide lighting (optional)

Practice/Learning Center Amenities:

- provide a lighted facility
- north orientation preferred
- 300 yd. depth minimum, 400 yd. depth preferred
- pro shop/ concession area adjacent to tee
- tee size: 20,000 sf (12-15 users)
- practice bunker
- practice green
- chipping green (2)
- synthetic and natural turf tees
- tee canopy (shade and heating)
- separate teaching area
- irrigation system
- target greens
- spectator area

II. Recommended Golf Course Site – Loch Ledge

2.1 Site Conditions

The Sanctuary/Loch Ledge Golf Course is a privately owned, regulation 18-hole golf course situated on 171 acres in Yorktown. The course is less than 6,000 yards in length. The front nine is the longer of the two nines and is very compact with many steep slopes that make the golf course a less desirable place to play. The back nine has very challenging terrain, is short in length and very hilly and may be considered unplayable with unfair playing conditions. Access to The Sanctuary/Loch Ledge is via a single direction access drive from Rte. 118. Egress is by a separate and narrow two-way driveway that is in fair condition with sections in need of reconstruction. The exit drive connects to a local town road that provides access to Route 118. The clubhouse, parking area, and surrounding landscapes are poorly maintained and are in need of landscape enhancement and circulation improvements.

Based on a visual inspection of The Sanctuary/Loch Ledge Golf Course in December 2000 and study of aerial mapping, it appears that the course could accommodate some of the golf needs identified in Westchester County. The front nine could be converted to an executive style nine-hole layout, eliminating the deficiencies that exist with the current regulation size layout. The back nine, particularly holes 10, 17 and 18, could be converted into a practice facility with some of the more playable adjacent holes renovated as executive style practice holes. The existing land area currently developed for golf could accommodate a practice facility and 12-hole executive style course. Three plan alternatives were initially prepared for review by County Staff. The preferred alternative is described below and illustrated on the plan titled "Loch Ledge Golf Course: Recommended Plan."

2.2 Recommendations

This study's goal is to meet the County's greatest needs. To accomplish this, it is recommended that The Sanctuary/Loch Ledge Golf Course be converted to a regulation 9-hole layout amenable to beginners that offers a variety of challenges for players with a broad range of skills. The recommended preferred plan includes the proposed layout superimposed on an aerial of the current course. The regulation 9-hole layout is routed to accommodate a renovated centralized clubhouse (also accommodating a possible concessionaire restaurant) and practice facility (driving range, practice greens and chipping area) with sufficient space to accommodate parking demand. The scheme shown improves the layout of the existing front nine to provide fairer playing conditions and more appropriate spacing between fairways. In many cases, existing green locations are re-used which may help reduce renovation costs. Proposed holes 1 through 5 are located on the existing front nine; holes 6 through 9 of the 9-hole layout are situated on the existing back nine. The routing utilizes the most playable portions of the back nine, reserves the level land adjacent to the clubhouse for the practice area and returns the 9th hole to the clubhouse.

The clubhouse is sized to accommodate the following:

- Food service and kitchen area: 1000 s.f.
- Dining area: 3,000 s.f.
- Lockers and restrooms: 2,000 s.f.
- Pro shop: 1,000 s.f.
- Misc./Storage/Common space: 1,500 s.f.
- Office space/management: 700 s.f.
- Cart storage (30-cart capacity)/other storage: 4,000 s.f.

The practice facility additions, and grounds and course improvements include the following:

- Parking (100 space capacity)
- Increased wooded area
- Improved golf cart circulation (clear and visible route)
- Low backstop at driving range (300-yd. distance)
- Controlled pedestrian and vehicular access to the practice greens
- Interesting and challenging layout for beginner play and instruction
- Protection of existing drainage patterns and water course
- Driving range with multiple "target" greens at various distances
- Synthetic and natural turf tee area with potential for installation of winter amenities

Scorecard

The scorecard for the recommended layout is as follows:

Blue Tee	389	390	583	338	189	290	180	156	356	
White Tee	373	383	553	303	176	266	156	150	326	2686
Par	4	4	5	4	3	4	3	3	4	34
Hole No.	1	2	3	4	5	6	7	8	9	
Red Tee	350	375	513	283	169	266	130	144	315	2545
Par	4	4	5	4	3	4	3	3	4	34

Tee and Green Area

Tee and green sizes for the recommended layout are as follows:

	Tee Area			Green Area
Hole No.	**White**	**Red**	**Blue**	
1	5,000 sf (min)	850 sf	400 sf	5,000 sf
2	6,000 sf (min)	white tee	white tee	5,000 sf
3	5,000 sf (min)	850 sf	400 sf	5,000 sf
4	5,000 sf (min)	850 sf	400 sf	4,500 sf
5	5,000 sf (min)	850 sf	400 sf	4,000 sf
6	5,500 sf (min)	white tee	600 sf	4,000 sf
7	5,000 sf (min)	850 sf	400 sf	5,000 sf
8	5,500 sf (min)	white tee	white tee	4,000 sf
9	5,500 sf (min)	white tee	400 sf	5,000 sf

2.3 Order-of-Magnitude Construction Cost Estimate

The following estimate includes order-of-magnitude level costs to renovate the grounds and structures at The Sanctuary/Loch Ledge Golf Course as shown on the attached drawings found in Part Two:

Earthwork	$725,000
Tree Restoration/Installation	$375,000
Strip, Store and Re-spread Topsoil	$400,000
New Topsoil	$550,000
Drainage Improvements	$300,000
Green Construction/Renovation	$200,000
Tee Construction/Renovation	$75,000
Bunker Construction	$40,000
Fairway Fine Grading and Seeding	$125,000
Rough Seeding	$50,000
Cart Paths	$155,000
Irrigation System	$350,000
Clubhouse: (partial demo/new construction)	$900,000
Land Acquisition	Not Included
Sub-total:	$4,245,000
Contingency (approx. 30%)	$1,200,000
Total:	$5,445,000
SAY	**$5,450,000**

2.4 Summary

The Sanctuary/Loch Ledge Golf Course is currently privately owned and operated, hence, the renovations described above would require acquisition of the property by Westchester County. The objective is to provide a more attractive and playable layout that would help in meeting the need for additional practice, teaching and junior golf facilities in Westchester County.

The existing grounds at The Sanctuary/Loch Ledge Golf Course provide poor playing conditions that would be challenging to renovate. The proposed layout includes a few holes, particularly holes 3 and 9, which contain greater than optimum grade changes reflective of the current conditions at The Sanctuary/Loch Ledge Golf Course. The slope conditions are less than ideal for most golfers, however, regulation play is achievable but will require a level of accuracy not normally expected of beginners.

III. Recommended Golf Course Expansion – Mohansic Golf Course

3.1 Site Conditions

The Mohansic Golf Course land area is roughly 800 acres in size and there exists substantial undeveloped area for future course development. It was known at the beginning of this study that previous proposals to expand and double the current 18-hole regulation course to a 36-hole twin course were denied due, in part, to perceived potential environmental concerns.

The land area immediately adjacent to existing holes 4, 5 and 6 is characterized by heavy vegetation (evergreen and deciduous) and steep slopes and may contain seasonal streams. The land area adjacent to existing holes 12, 15 and 16 appear to be more moderately sloped and, though contiguous with the Mohansic woodlands, is essentially the southern terminus surrounded by Baldwin Road, the existing golf course and residential development further to the South. The property along the north and west of the 6th, 5th, and 4th holes has much steeper slopes and a large stand of mature evergreen trees making this area less suitable for development. Along the northern border, the vegetation is thick and provides habitat for wildlife as well as a buffer between the course and the nearby Taconic Parkway.

With the addition of any additional golf holes at Mohansic, consideration must be given to the proximity of the starting and finishing holes of each nine. Strategically locating these holes can better utilize concession and restroom facilities and reduce future staffing needs and operations costs. The area being considered for expansion at Mohansic Golf Course, adjacent to holes 12, 15 and 16 contains moderately sloping topography, some wetlands and predominantly deciduous tree cover. Wetland impacts and mitigating measures will need to be considered and implemented in conjunction with acquiring local, state and federal permits. A Phase IA archeological investigation should be undertaken as a supplement to a previously conducted Phase IA study that addressed other portions of Mohansic Golf Course. The previous study identified a number of areas of Native American and historic period sensitivity.

3.2 Recommendations

The additional nine holes proposed in this study would occupy the area south and west of the existing course. The holes are sited to provide a compact course layout while minimizing area impact and disturbance to existing woodland slopes and natural drainage patterns. The new nine holes would start and finish adjacent to the existing 9th hole, providing access to all sets of nines along a central corridor, which would extend southwest from the clubhouse. Holes 1, 2, and 3 would run south along the west border, with most of the holes occupying the land to the south of the existing course. The new 9th hole would sit between the existing 10th and 16th holes.

An existing drainage-way crosses the existing 13th hole and would continue through the proposed 3rd hole. The recommended layout is designed to effectively maintain the existing drainage

pattern. Grading for the recommended layout will conform, to the extent possible, with the sloping topography and as many of the existing trees as possible will remain to provide a mature buffer between holes and adjacent land uses as well as preserve wildlife habitat. Terracing would be necessary to provide level lies and fair playing conditions on proposed holes 4 through 8 of the recommended layout.

The layout does encroach upon and overlap existing wetlands and buffers. The plan has incorporated wetland areas, though some filling and earthwork is required within wetlands and buffer areas. The proposed layout also provides for the continuity of open wetlands to minimize the need for fill, water diversion, piping and culverts. Implementation of the recommended plan would require the clearing of approximately 55 to 65 acres of wooded area and would directly impact approximately 7 acres of existing wetlands, excluding buffer area. The Mohansic Golf Course: Existing Conditions and Recommended Routing Plan depicted in Part 2 of this report delineates the wetland areas and buffers, which are based on previous studies conducted by Westchester County.

Scorecard

The scorecard for the additional 9 holes at Mohansic Golf Course is as follows:

White Tee	403	326	350	543	163	416	201	350	420	3,172
Par	4	4	4	5	3	4	3	4	4	35
Hole No.	1	2	3	4	5	6	7	8	9	
Red Tee	383	316	326	450	150	360	156	340	343	2,824
Par	5	4	4	5	3	5	3	4	4	37

Tee and Green Area

Tee and green sizes for the recommended layout are as follows:

	I. Tee Area		II. Green Area
Hole No.	**White**	**Red**	
1	5,000 sf (min)	850 sf	5,000 sf
2	5,000 sf (min)	850 sf	5,000 sf
3	5,000 sf (min)	850 sf	5,000 sf
4	5,000 sf (min)	850 sf	5,000 sf
5	5,000 sf (min)	850 sf	5,000 sf
6	5,000 sf (min)	850 sf	5,000 sf
7	5,000 sf (min)	850 sf	5,000 sf
8	5,000 sf (min)	850 sf	5,000 sf
9	5,000 sf (min)	850 sf	5,000 sf

3.3 Order-of-Magnitude Construction Cost Estimate

The following estimate includes order-of-magnitude level costs needed to renovate and expand the grounds at Mohansic Golf Course as shown in two drawings in Part Two:

Item	Cost
Earthwork	$950,000
Tree Restoration/Installation	$80,000
Site Clearing	$120,000
Strip, Store and Re-spread Topsoil	$380,000
New Topsoil	$200,000
Drainage Improvements	$300,000
Green Construction	$230,000
Tee Construction	$75,000
Bunker Construction	$75,000
Fairway Fine Grading and Seeding	$200,000
Rough Seeding	$70,000
Cart Paths	$175,000
Irrigation System	$350,000
Structures (bridging)	$140,000
Land Acquisition	Not Required
Sub-total:	$3,345,000
Contingency (approx. 30%)	$1,000,000
Total:	$4,345,000
SAY	**$4,350,000**

3.4 Summary

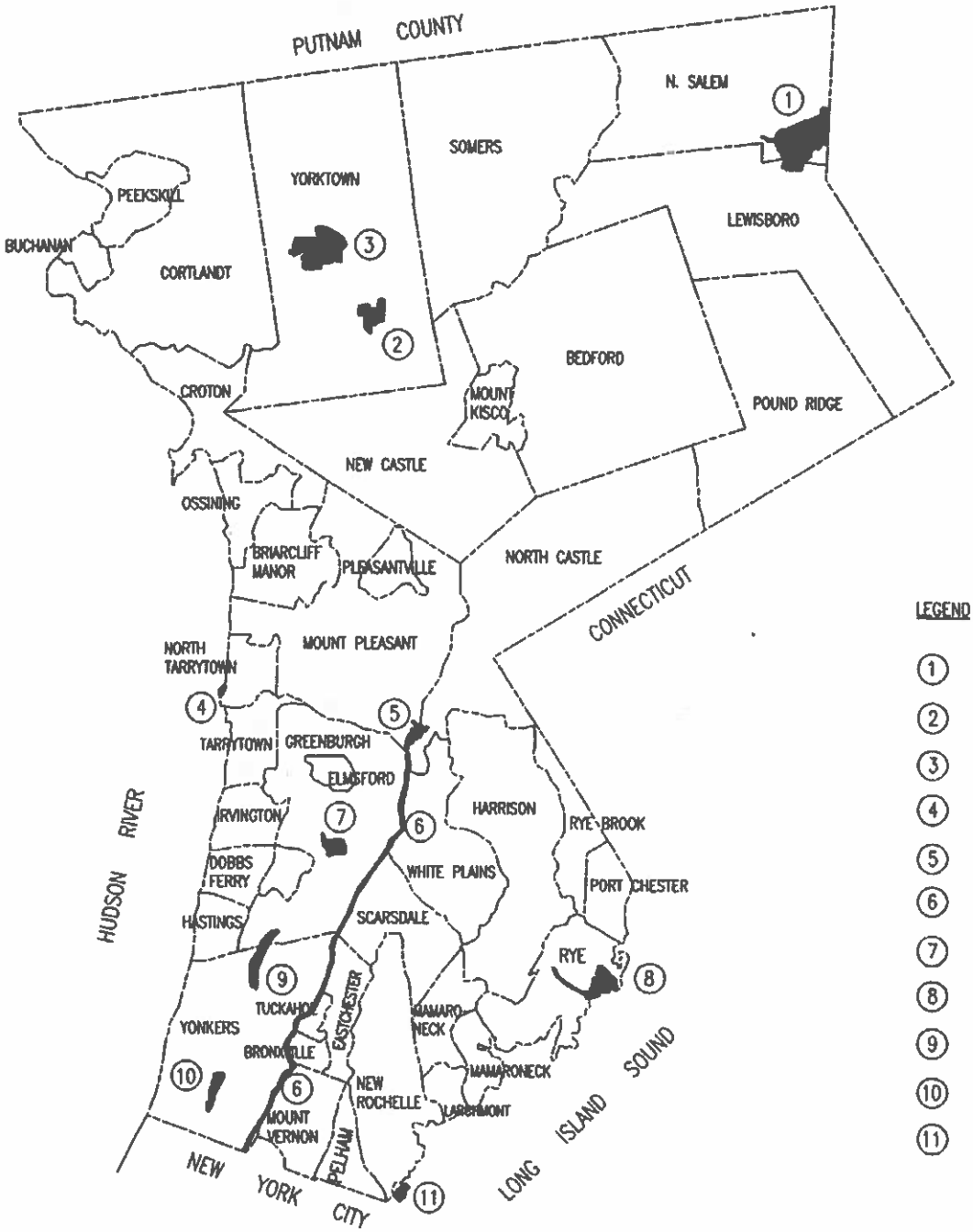
The current 18-hole Mohansic Golf Course is the only county course with the potential for expansion. With full recognition of the environmentally sensitive issues that scuttled previous attempts to expand this course, it is believed that that through careful and judicious planning, nine additional holes can be wrapped around the existing areas of play with a minimum of impacts.

PARKS
WESTCHESTER COUNTY

PLAYLAND PARK
SWIMMING/AQUATIC
FACILITY STUDY

PLAYLAND PARK SWIMMING/AQUATIC FACILITY STUDY

PARKS
WESTCHESTER COUNTY



LEGEND

1	MOUNTAIN LAKES PARK
2	LOCH LEDGE GOLF COURSE
3	MOHANSIC GOLF COURSE
4	KINGSLAND PARK
5	KENSICO DAM PLAZA
6	BRONX RIVER PARKWAY
7	RIDGE ROAD PARK
8	PLAYLAND PARK
9	SPRAIN RIDGE PARK
10	TIBBETTS BROOK PARK
11	GLEN ISLAND

LOCATION PLAN
NOT TO SCALE

PLAYLAND PARK

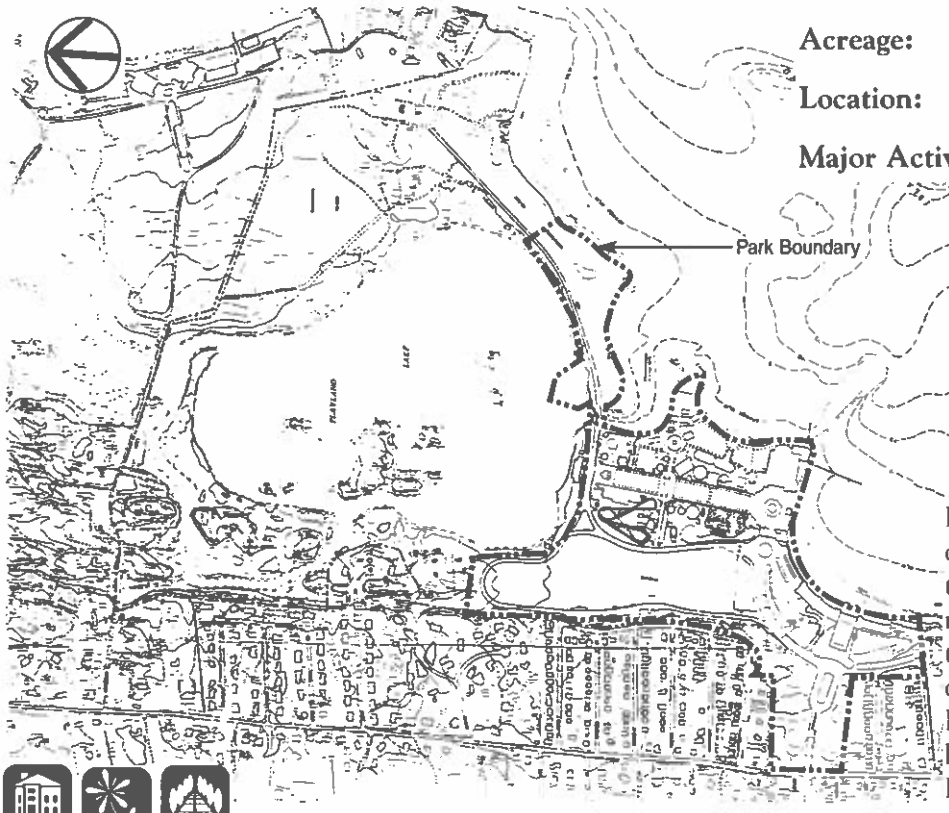
PARKS
WESTCHESTER COUNTY

Date Acquired: *1923 & 1925*

Acreage: *313 Acres*

Location: *Rye City*

Major Activities:
- *amusement park*
- *swimming beach and pool*
- *indoor ice skating*
- *picnicking*
- *fishing*
- *mini golf*
- *walking/boardwalk*
- *concession/refreshments*
- *playing field*
- *boating lake*



National Historic Landmark Designation

Map

Designated a NHL, this property is one of the oldest amusement facilities of its type in the country. Many historic rides still exist as does the strong central mall design layout. This highly developed park is located on the Long Island Sound. A new picnic facility has been recently added along Playland Lake.

Northeast View of Structures/Beach and Boardwalk

Playland Pool

Miniature Golf- Off Boardwalk

View of Reserved Picnic Areas

Unused Portion of the Bath House- North End of Boardwalk

I. Introduction

1.1 Needs and Purpose

Built in the 1920's with the original park, the swimming pool facility's physical plant has reached the end of its serviceable lifespan. The pool leaks and the mechanical system equipment is subject to constant repair. Additionally, the basic configuration of the pool, a typical rectangular tank with shallow and deep ends, is outmoded and not in sync with the current trends in the aquatics industry. Pool users today want a multi-faceted water experience similar to that found at other water parks. The need of this study therefore is to develop a concept for a replacement pool that services the users of today. Any replacement facility must first and foremost consider the park's historic context. The current pool's footprint and its intimate spatial relationship with both the bathhouse and the entrance driveway arrival sequence require that any replacement facility must respect these associations. The purpose of the study is to determine what kind of facility would be feasible considering these restraints.

1.2 Location and Description

Playland Park is an amusement park located in Westchester County on the Long Island Sound in Rye, New York. Opened in 1928, it is the only amusement park designed in the Art Deco style and is listed on the National Register of Historic Places and is a National Historic Landmark. The Bathhouse defines the boardwalk and beach area on the east side and the swimming pool on the west side. The Bathhouse is finished in stucco, brick and tile in a Spanish Revival Art Deco style. The center of the Bathhouse is marked by two Moorish towers with domed cupolas. Stairs at the sides of the towers lead to the upper level where the pool and concession area is located.

The existing pool facility consists of a single pool basin approximately 150 feet long by 75 feet wide with depths varying from 3 feet in the shallow end to 10 feet in the deep end. The existing pool is leaking at 35,000 gallons/day, providing the primary motivation for redesign of the pool facility. Surrounding the pool is a concrete deck approximately 18 feet on both sides and 30 feet at each end. The pool complex sits between the two Bathhouse towers, on line with the view out to the Sound and on axis with Playland Parkway and the park entrance boulevard. To the south is a visitor parking lot and to the north side the bus driveway winds through lawn, trees and rock outcropping before entering the employee parking lot and bus drop off area. The topography on the north side slopes off from the grade of the existing pool.

II. Recommendations

The redesign of the Playland pool facility includes the modification of the existing pool basin and the addition of smaller, activities based pools into a leisure pool facility. The recommended Master Plan scheme includes the following features:

- multi-use pool with zero-depth entry, 6-lane, 25 yard lap area and a kiddy drop slide
- 520-foot long lazy river that also serves as catch pool for tube slide

- fenced in spray deck
- activity pool with body slide, bubble jets and wet bench
- tube rental and storage area
- decks and lawn area for lounging
- renovated concession area and changing rooms in the existing Bathhouse

The footprint of the existing pool basin would be reconfigured into a single multi-use pool with zero-depth entry at one end and a splashdown pool and drop slide at the other end. The middle portion of the pool can accommodate a 6-lane lap area and can also be used for activities such as a lilypad or log walk. The kid's spray deck is shown adjacent to the multi-use activity pool and surrounded by a low fence to provide separation from the deeper pools. Although modified and reconfigured, the multi-use pool and spray area will occupy the area of the existing pool and maintain the view between the two Bathhouse towers and out to the Long Island Sound. This area sits somewhat higher than the land to the north, where the other features of the new leisure pool facility will be sited. These two spaces, the upper and lower areas will be connected with wide terraced steps and a ramped area.

In the lower area, a 520-foot long lazy river will encircle a body slide and splashdown/activity pool. The splashdown/activity pool will be connected by a wet bench to a relaxation pool, complete with bubble jets and sprayers. A ramp will bridge the river and provide access to the pools surrounded by the river. The tube slide, sited immediately behind the Bathhouse tower to take advantage of the higher elevation, will empty into a splashdown pool, which will also serve as entry into the lazy river.

Entrance into the complex would be adjacent to the entry road, replacing the current entrance through the Bathhouse, with sidewalks leading from both the north and south parking areas. Steel picket, or other transparent security fencing should surround the facility for enclosure with buffer plantings along the perimeter to block views to the entry road and bus driveway. Concessions, restrooms, changing rooms and lockers for both beach and pool users, will remain within the existing Bathhouse with upgrades and improvements made to the interior space. Additionally, food carts could be located throughout the facility to bring concessions closer to the visitors in the north part of the facility and eliminate the need for construction of a new concession building. As part of a separate Master Plan for Playland Amusement Park, to be prepared by a consultant to be determined, a proposed Children's Museum will be located in the Bathhouse.

The expansion of the pool facility towards the north, will require the relocation of the bus driveway and the existing employee parking lot/bus drop off will need to be reorganized to maintain the number of parking spaces as closely as possible to the existing. The recommended Master Plan scheme shows two options for bus parking and stacking:

- The creation of a new bus pull-off adjacent to the Bathhouse's colonnades and separated from the entry road with an island or striping

- The relocation of the existing bus driveway further north resulting in the loss of approximately 10 parking stalls.

The construction of the bus pull off lane would allow the historic overhead colonnade to be used as an area for passengers to board and deboard the buses. Also, the pull off lane would not require space to be taken from the parking lot.

Relocating the bus driveway further north would allow the buses to continue entering the parking /drop off area but would require cutting into the parking lot area resulting in loss of parking stalls and a portion of the historically significant overhead colonnades.

In addition to accommodating the elements of a successful leisure pool facility as shown on the Master Plan, the historic character of Playland must also be retained. This can be achieved with sensitive siting and selection of features located within the view corridor to avoid compromising the architecture of the Bathhouse towers or impeding the view out to the Sound. Larger features such as higher profile water slides can be sited off of this main axis and in the lower, expanded area to the north.

III. Order of Magnitude Cost Estimates

From the Master Plan recommendations shown on the attached drawings. The following costs are projected.

New Leisure Pool Facility

Earthwork & Rock Excavation	$55,000
Removals	$70,000
Water Slides	$450,000
Activity Pools	$1,275,000
Lazy River w/ Bridge	$1,050,000
Spray Deck	$140,000
Entry Gate	$60,000
Paving, Steps and Fencing:	$350,000
Landscaping	$100,000
Subtotal:	**$3,550,000**
Mobilization @ 6%,	$215,000
Overhead and Profit @ 10%	$375,000
Subtotal:	**$4,140,000**
Contingency @ 15%	$625,000
Total:	**$4,765,000**

SAY	**$4,775,000**

New Bus Parking – Option I

Maint & Protection of Traffic	$3,000
Earthwork	$8,000
Removals	$16,000
New Concrete Curb	$16,000
New Asphalt Pull-off Lane	$40,000
Landscaping	$11,000
Subtotal:	**$ 94,000**
Mobilization, Overhead & Profit	$16,000
Subtotal:	**$110,000**
Contingency @ 15%	$16,500
Total:	**$126,500**
SAY	**$127,000**

New Bus Parking – Option II

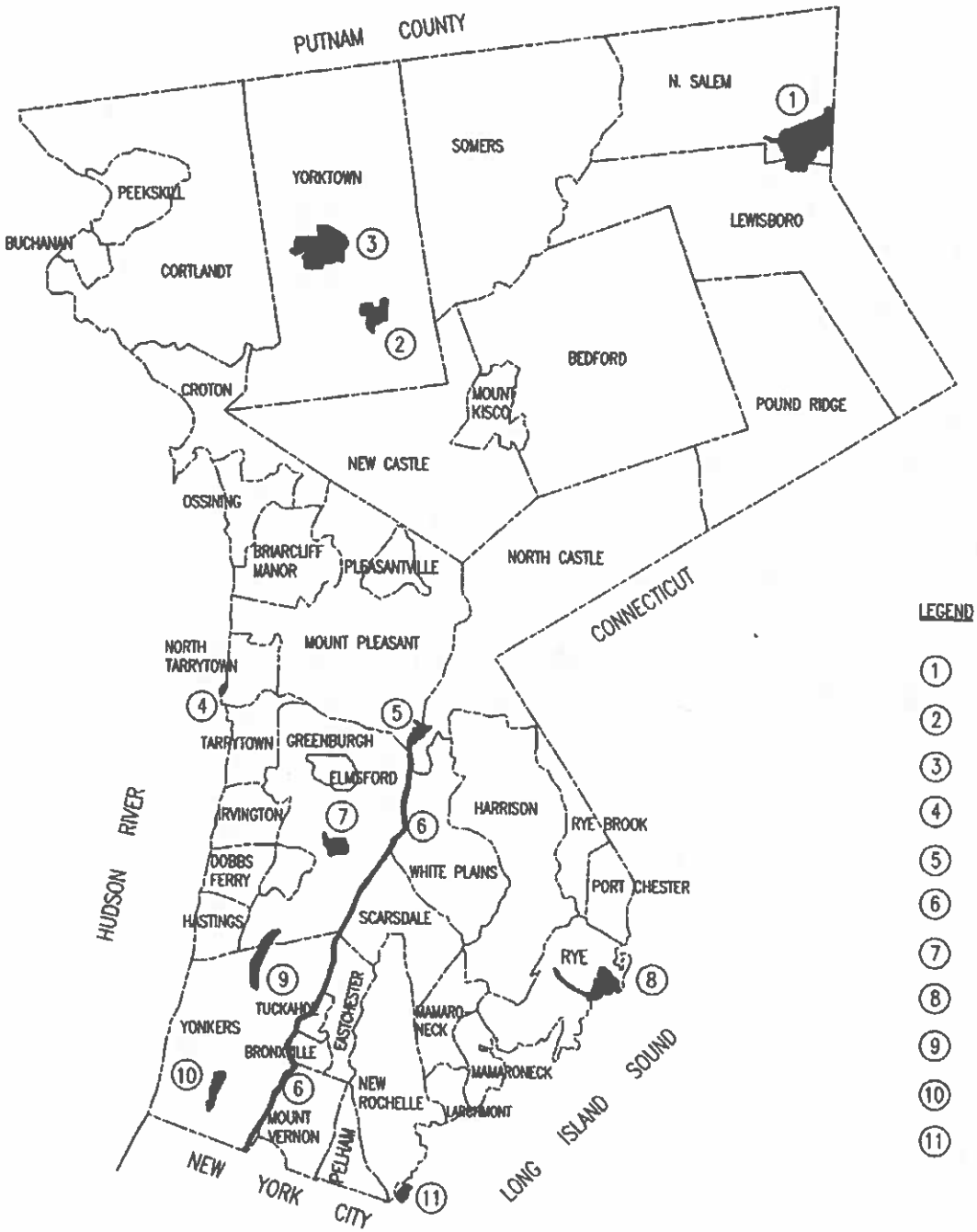
Maint & Protection of Traffic	$3,000
Earthwork	$10,000
Removals	$9,000
New Concrete Curb	$10,000
New Asphalt Pull-off Lane	$20,000
Subtotal:	**$52,000**
Mobilization, Overhead & Profit	$9,000
Subtotal:	**$61,000**
Contingency @ 15%	$9,000
Total:	**$69,000**
SAY	**$70,000**

PARKS
WESTCHESTER COUNTY

BRONX RIVER PARKWAY RESERVATION

BRONX RIVER PARKWAY RESERVATION

PARKS
WESTCHESTER COUNTY



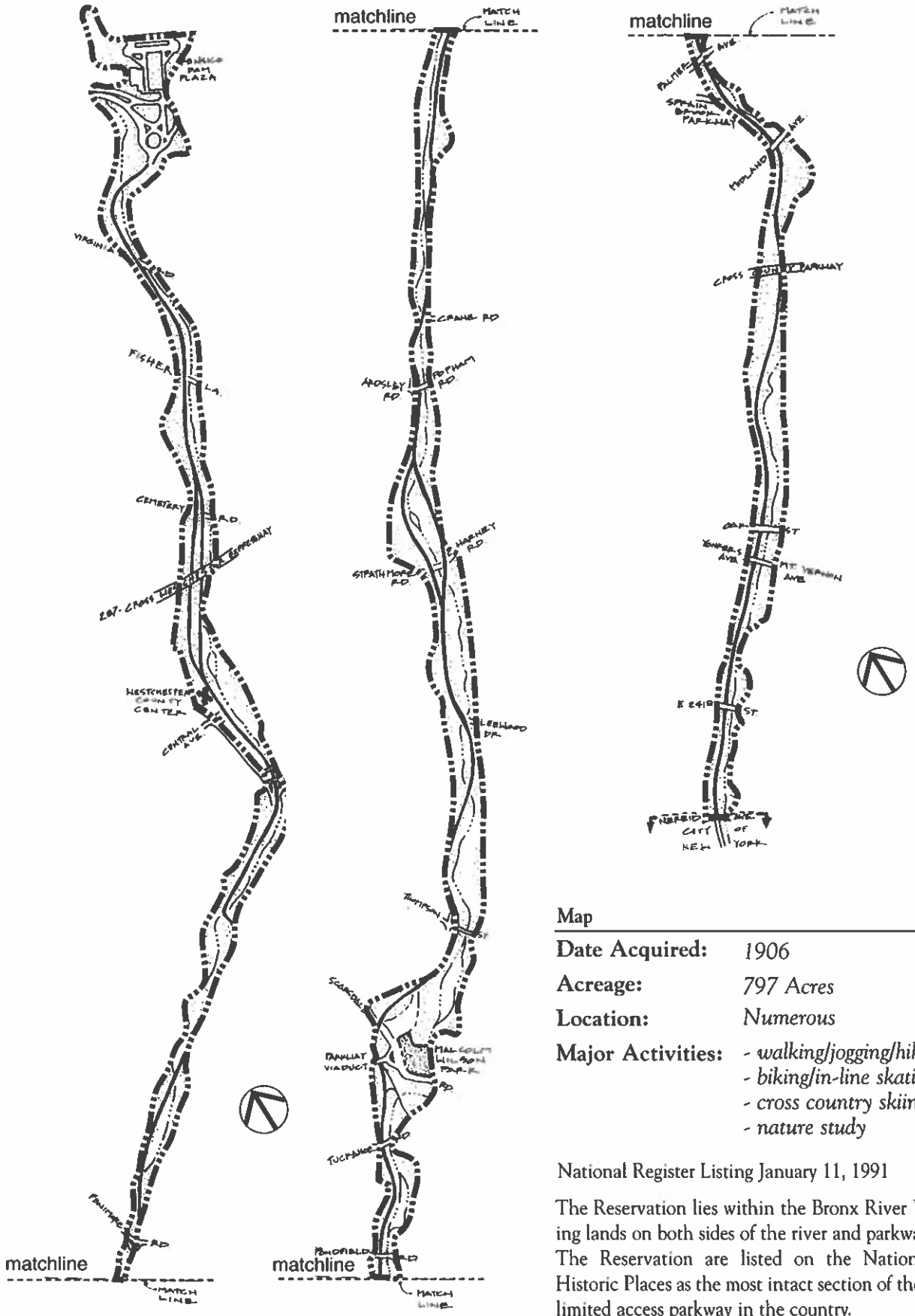
LEGEND

1	MOUNTAIN LAKES PARK
2	LOCH LEDGE GOLF COURSE
3	MOHANSIC GOLF COURSE
4	KINGSLAND PARK
5	KENSICO DAM PLAZA
6	BRONX RIVER PARKWAY
7	RIDGE ROAD PARK
8	PLAYLAND PARK
9	SPRAIN RIDGE PARK
10	TIBBETTS BROOK PARK
11	GLEN ISLAND

LOCATION PLAN
NOT TO SCALE

BRONX RIVER PARKWAY RESERVATION

PARKS
WESTCHESTER COUNTY



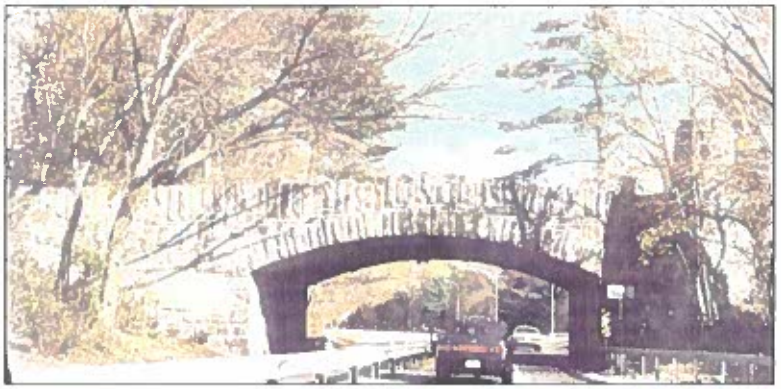
Map

Date Acquired:	*1906*
Acreage:	*797 Acres*
Location:	*Numerous*
Major Activities:	*- walking/jogging/hiking* *- biking/in-line skating* *- cross country skiing* *- nature study*

National Register Listing January 11, 1991

The Reservation lies within the Bronx River Valley comprising lands on both sides of the river and parkway. Ten miles of The Reservation are listed on the National Register of Historic Places as the most intact section of the earliest public limited access parkway in the country.

Typical View From the Parkway



Typical Features of the Parkway

Picturesque views

Woodland Viaduct

I. Introduction

1.1 Location and Description

The Bronx River Parkway Reservation is a linear park comprising approximately 800 acres located within the core of Westchester County, New York. The Reservation consists of three major elements; the roadway, its surrounding landscape and the river. The roadway traverses within the county in a north to south direction for thirteen miles as a continuous experience extending from the Kensico Dam Plaza in Valhalla to the north down to the county border with Bronx County border to the south in Wakefield. The northernmost ten miles of the Parkway from the Kensico Dam to where it meets the Sprain Brook Parkway has been listed on the National Register of Historic Places since 1991. As the roadway and river winds its way through the Reservation, the intrinsic qualities of the Reservation, characteristic of a river valley, predominate the landscape. This landscape's rich history and spectacular scenery contains open lawns, woodland areas and meandering pathways intended for both passive and active recreation uses. Originally the Bronx River began much farther north than its current headwaters. Once the Kensico Dam project was completed, the new source for the Bronx River became the Davis Brook and thus, the Bronx River continued its flow throughout the Reservation roughly paralleling the roadway. At one time, the river fueled the many mills that once dotted the Reservation as well as providing wading and ice skating amenities for the community to enjoy.

1.2 History and Design Philosophy

The river was named after Swedish pioneer Jonas Bronck who established his farm near the river's mouth in 1639. Over the next several hundred years, the river and its adjacent lands would undergo major developmental changes, many not beneficial to the natural environment. The train line, running parallel to the river, had a debilitating impact on the Reservation causing land adjacent to the river to fall into disrepair and become unsuitable for residential use. The area along the train line became a dumping ground for industrial garbage and sanitary sewage waste that ultimately found its way into the river and flowed downstream poisoning the life of the river. In the early 1900's, legislation was written to form a joint Westchester County/New York City commission. Their charge was to clean the river and to construct a roadway and sewer along the river in an effort to preserve the river and lands adjacent to it, forming the Reservation as it consists today.

Westchester County has embraced the landscape, architectural and historical characteristics of this unique resource ever since. Currently, the Reservation maintains its original design philosophy of enhancing the surrounding terrain through the preservation of natural features while providing a variety of cultural experiences for both the roadway and pathway user. In the 76 years since the construction of the parkway, the New York State Department of Transportation (NYSDOT) has realigned the three miles of southern parkway to comply with current highway design guidelines. The northern stretch (historic designation) is still under jurisdiction of Westchester County, but has also been altered to comply with NYSDOT

guidelines. The surrounding municipalities have constructed additional telephone, water, sanitary and storm utility lines to accommodate the needs of the increasing urbanization of the area and the Reservation has continually been degraded by these improvements.

II. Recommendations

Many of the changes that have occurred within the Reservation over the ensuing years have had varying degrees of success. Many of them have proved positive. Others have ultimately been detrimental to the original design philosophy of the Reservation resulting in the need to prepare a plan that identifies recommendations that would continue to preserve and enhance the Reservation. The recommendations discussed in the Comprehensive Corridor Management Plan (CCMP), which was developed by the Westchester County Planning and Parks Departments and with public input, have provided the framework to begin to restore the original feeling that the Reservation first enjoyed at its inception. To create an action plan WCPRC should coordinate with the CCMP, work groups and the recommendations outlined in this report to develop a plan that will aid them in their future operational decisions. The following categories of improvements should be addressed:

- Reservation Identification Measures
- Context Sensitive Roadway Enhancements
- Pathway Resurfacing, Site Furnishings and Safety Measure Improvements
- Streambank Stabilization and Shoreline Restoration Improvements
- Re-use Options for the Existing Gas Station Buildings
- Community Interaction and Involvement Programs
- Ongoing Reservation Maintenance and Invasive Species Control Practices

2.1 Reservation Identification Measures

The Reservation currently contains a myriad of different sign types and mounting post details. Traffic regulatory signs that conform to the Manual of Uniform Traffic Control Devices (MUTCD) specifications, informational signs, and other identification signs are placed at various locations and roadway crossings along the pathway. These signs are mounted on wooden posts, steel drive rail posts and some to existing trees and utility poles. The following are recommended sign types that should be installed along the pathway system as either new additions to the existing signage program or as retrofits to the signage that currently exists:

1) Mile marker sign posts installed at every half-mile along the pathway with the northbound distance and southbound distance identified on opposite sides of the post.

2) Directional signs installed at each intersecting roadway crossing that identifies various local destination points along the pathway and within adjacent cities.

3) Entrance "gateway" signs installed at the northernmost and southernmost entrances to the pathway system as well as at other County Park properties that adjoin the Reservation pathway. These would include Governor Malcolm Wilson Park and the County Center as well as at points along the Parkway where programs such as the Bike and Skate Sunday program occur.

4) Informational and interpretive signage intended to educate park users that can be developed from a historical trails program.

In an effort to coordinate the assortment of signs and post types, the following recommendations should be instituted. As identified on the Master Plan, all signage posts should be fabricated of locust wood, which was historically used along the parkway for its durability and aesthetic qualities. All signage panels except those dictated by MUTCD requirements should be etched metal or routed wood panels fabricated by the Westchester County Parks maintenance department. The fastening system would have a slide and lock mechanism that is tamperproof but easily replaceable if changes are needed or if damage to the sign face occurs. There are additional opportunities to coordinate with Metro North and utilize the rail cars or train station spaces for exhibit space and signage.

An historical trail interpretive sign program should be created that would research and highlight important historical sites, land acquisitions or geological features along the pathway. The program would develop a plan that identifies the appropriate information resulting in the installation of informational signs at key locations along the trail within or adjacent to the Reservation. On the attached Master Plan, potential locations have been identified where these signs should be installed. The signage construction and detailing should be consistent with the recommended entrance and directional signage

The roadway signs located along the north and southbound parkway lanes of traffic conform to NYSDOT/MUTCD rules and regulations. These signs consist of the standard highway signage and posts seen along most highways in the state. All signs along the Bronx River Parkway should be sensitive to the context and history associated with the Bronx River Parkway. This would include mounting these regulatory signs on breakaway timber posts and painting the rear of all sign panels a rust color (similar to cor-ten steel) to be less noticeable to the opposing lanes of traffic. A GIS inventory was performed of the existing signs along the Reservation which should be amended to include the above recommended sign types, this in turn would facilitate the monitoring of reservation signage and provide Westchester County Department of Public Works with a reliable database when obtaining capital funding for additional or replacement signage.

2.2 Context Sensitive Roadway Enhancements

Over the past 76 years the Bronx River Parkway has changed from a motorway through a park primarily meant for leisurely pleasure driving into a congested commuter thoroughfare. As a result, Westchester County has, over the years, instituted geometric changes and associated safety measures to the parkway that accommodate those increased traffic volumes to the detriment of the original Parkway concept. Some of these improvements, such as roadway realignments, guide rail installations, Jersey-styled barriers and cobra-head lighting, have lessened or eliminated the design intent of the Parkway expressed by the original highway's geometry, flagstone walls and tapered wood post lighting standards. In an attempt to try and restore the original design concept and to not compromise the safety of the parkway user, several recommendations discussed below should be implemented.

The last remaining sections of the Bronx River Parkway that still utilize the original highway geometry are the portions just north of Harney Road within Garth Woods and the area between Lafayette Street bridge and Virginia Road. The undulating terrain and meandering roadway weaves amongst the mature forest stand allowing the driver to envision the experience of pleasure driving an antique automobile. Understandably, the entire length of parkway can not be reconstructed to conform to its previously existing alignment as still exists here, but lane widths and shoulder dimensions along with curb details that are consistent throughout the entire length of the Parkway can be added to the parkway where inconsistency now pervades. In doing so, a design theme can be established that would give the driver both a concordant palette of visual improvements that also improves driver safety.

Additional Parkway appurtenances can also be retrofitted to reflect a style more sensitive to the original context without jeopardizing vehicular safety. A particular example of this type of treatment can be seen at the recently reconstructed Harney Road Bridge project. The existing galvanized steel beam guide rails along portions of the parkway perimeter and median should be replaced with either the most rustically styled Cor-ten steel box beam-type or the steel-backed timber-faced guide rail type as successfully used on the historic Merritt Parkway in Connecticut. Concrete Jersey-style barriers are also located periodically throughout the roadway and median. These visually offensive and contextually insensitive existing barrier should be replaced with materials and construction methods that utilize materials more representative of the roadway's original character. An example of this can be seen with the reinforced concrete wall faced with local granite installed on the southbound side of the Parkway just north of the newly rehabilitated Woodland Viaduct. The 1960's–styled cobra head lighting standards that line the parkway in both directions are another out of context roadway element that should be addressed. Lights that are more in harmony with the Parkway's original 1920's aesthetic should be considered. At the Popham Road bridge on the southbound parkway entrance ramp is the last remaining original light pole fixture from the Parkway's earlier era. This original fixture and wooden pole is being reconstructed to replicate this roadway appurtenance while accommodating today's required

photometrics and safety measures. These fixtures and poles should be used at intersections and other areas requiring lighting.

2.3 Pathway Resurfacing, Site Furnishing and Safety Measures Improvements

Experiencing the Bronx River Parkway Reservation from the pathway is similar in many ways to strolling along the curvilinear pathways found throughout New York City's Central Park. The noise and chaos generated by the surrounding traffic whizzing by is less noticeable as the park user wanders, jogs, bikes or blades along the paralleling pathway. At the northernmost section of the Parkway Reservation lies the significant architectural feature of Kensico Dam and Plaza. Adjacent to the entrance to the Kensico Plaza and across Kensico Road is the entrance to the Bronx River Parkway Reservation's pathway system. The pathway heads in a southerly direction along the river and over several footbridges. Upon reaching Fenimore Road, the dedicated pathway ends and the pathway user can either return back to the Kensico Plaza area or continue southbound via Scarsdale's street system along Fox Meadow Road. Once through Scarsdale, beyond the Popham Road bridge, the dedicated pathway system picks back up again at Harvey Road in Eastchester. The pathway then ultimately terminates at Palmer Avenue just south of Bronxville Lake.

The pathway is constructed in most locations of either asphalt pavement or compacted stone screenings and in various locations it is in need of repair as noted on the attached Master Plan. Where repairs are necessary, the pathway should be reconstructed in kind with similar materials. Where existing stone screenings pathways have longitudinal slopes that exceed 5-6%, the pathway should be replaced with a new asphalt pavement. The existing pathway is within close proximity to the river and in several locations the pavement has heaved, thus creating ponding problems forming a dam that does not allow the surface water to flow naturally towards the river. Where noted on the attached Master Plan, a new pavement section should be installed that acts as a French drain system permitting the water to flow under the new pathway. Also, in constructing new trails and repairing the old trails, a hierarchy should be established with primary trails eight feet wide and secondary trails six feet wide.

The entire pathway currently extends for approximately ten miles throughout several municipalities crossing many local streets. Prior to reaching vantagepoints where intersecting vehicular traffic is visible, seating areas are available where benches and other amenities should be installed to increase the park user's experience of the passive recreation aspect of the Reservation. Amenities such as benches should be fabricated of materials that are historically similar to the early parkway years and installed at various locations along the pathway, as noted on the attached plan. At each roadway crossing, the pathway user should be greeted with signage indicating local points of interest and a striped crosswalk across the local street.

Additionally, new pathways should be constructed in the following locations to increase connections from the neighboring communities and to improve safety for pathway users. In four locations, the pathway should either be rerouted from its existing alignment or new pathways

constructed to increase local access as identified on the attached Master Plan. The four recommended improvements are as follows:

1) The existing pathway alignment at the County Center parking lot and along the Hamilton Avenue and Main Street Bridges is confusing for pedestrians and it is difficult to navigate through the vehicular traffic conflicts. Just north of the County Center, the pathway intersects with the Bronx Road access ramp. Heading south, the pathway should travel along Bronx Road to the train station. The pathway should then travel along the river, underneath Hamilton Avenue, Main Street and the Bronx River Parkway's northbound exit ramp and then rejoin the existing pathway south of the exit ramp.

2) Pathway users approaching Fenimore Road must leave the dedicated pathway and travel on Fox Meadow Road to get back onto the trail where it picks up again in Eastchester. Fox Meadow Road should be striped and signed as needed to conform to the Class II bicycle design standards per the AASHTO classification system. Alternatively, the overgrown trail from the 1925 alignment that exists between the southbound parkway lanes and the river could be reconstructed to provide the same link as mentioned above. Additionally, a walking trail should be reconstructed between the northbound roadway and the residences immediately to the east. This walking trail would connect the pathway at Fenimore Road with the land and trails of the Butler Woods tract.

3) Immediately south of Crestwood Lake at Governor Malcolm Wilson Park is the current southern terminus of the Bike and Skate Sundays Program. The Bronx River Parkway Reservation pathway system has no direct connection with Wilson Park other than directional signage along the existing city street system. At the southernmost tip of Crestwood Lake just before the Scout Cabin there is enough room to construct a pathway along the western edge of the river into Wilson Park. When leaving Wilson Park, the pathway should be routed either into the Village of Tuckahoe or along Scarsdale Road to ultimately connect back into the Reservation system as identified on the Master Plan.

4) The existing pathway currently ends at Palmer Avenue just south of Bronxville Lake. The opportunity to connect this pathway to Scout Field just north of the Cross County Parkway interchange should be taken advantage to link this active recreation facility with the rest of the Bronx River Parkway Reservation. This linkage can be constructed through reconstruction of the degraded pathways that exist in a fragmented state

along the river and through the installation of new signage directing the park user along the municipal streets.

Linkages to other County Parks and trails such as the North and South County Trails throughout Westchester should be constructed as well. The North County Trailway connection should be constructed via Virginia Road in Mount Pleasant and the South County Trailway connection should be constructed via Tuckahoe Road in Yonkers. Other connections with adjacent train stations and local businesses should be considered and could act as rest stops for both the pedestrian and vehicle along the reservation. These rest stops should have information and maps concerning the reservation and could house WCPRC or Bronx River Parks and Recreation Commission personnel. An ideal location for this type of connection is at the County Center. Additionally, a pathway location study should be performed to connect the southern portion of the current pathway with both the Oak Street Loop and connections to the Bronx. The installation of new signage identifying the direction where these recommended connections, adjacent landmarks, food or help are available would increase public awareness to and from the Reservation and increase safety.

2.4 Streambank Stabilization and Shoreline Restoration Improvements

The Bronx River and the immediately adjacent lands flanking it are a dynamic natural ecosystem. Its greatest challenge has been withstanding some well-intentioned but occasionally ill-conceived man-made improvements. In earlier days, the lakes along the river that were originally created as sediment retention areas were also extensively used for swimming and ice-skating. In many locations, the river's edge was lush with vegetation and the Reservation's pathway ran within inches of the riverbank. Today, the river's environment continues to undergo change on an ongoing basis, whether it by the influence of man or by natural causes such as the impact of animals and erosion. It is the effects of soil erosion that should be of immediate concern from both a safety and aesthetic point of view. It is also worth noting that not all eroded areas along the riverbanks need be stabilized since the river needs a certain amount of natural erosion to occur to keep its ecosystem in balance. The silt generated from the erosion is carried downstream and deposited in areas of the river where the lakes exist today. The accumulation of great quantities of silt ultimately decreases the lake's holding capacity and ultimately impedes the river's flow. This accumulation of silt also reduces not only the lake's recreational value potential but there are aesthetic concerns as well

Identified on the Master Plan are areas where the river's banks have become eroded to a point where, if not addressed, substantial further damage will occur. These locations for improvements have been found through field investigations and reports generated by the Army Corps of Engineers and the Department of Public Works. There are several techniques available to stabilize and restore the streambanks and shorelines of the river. Identified on the attached masterplan drawing is a preferred method for reestablishing the riverbanks that would both encourage beneficial vegetative growth and deter the geese and human populations from having unrestricted access to the water's edge.

Of particular concern are the following three areas: Ann's Way, Crestwood Lake and Bronxville Lake.

1) Ann's Way – Currently Ann's Way is being reconstructed, but previously the lakebed located behind the County's tennis club on the Parkway was completely devoid of water and it exhibited noticeable silt deposits. The outlet structure in the lake and the dam just north of this lake were in advanced stages of disrepair. The outlet structure had collapsed and needed reconstruction so it could regulate the flow of water out of the lake based upon the volume of water coming into the lake. The dam just north of the lakebed needed to be slurry-coated to raise its weir elevation to direct water to Ann's Way pond. Additionally, the lake needed dredging to increase capacity.

2) Crestwood Lake - The lake has ongoing siltation islands building up within it. The pond should be aerated to increase the oxygen level to encourage habitat. The silt deposits should be dredged to increase lake capacity.

3) Bronxville Lake- This lake also has ongoing siltation islands building up within it. The addition of a solar powered aerator is also recommended along with dredging this lake as well. The dredged material from this lake can be deposited adjacent to the existing knoll located immediately north of the lake. Additional soil placed here would increase accessibility to the knoll and allow park users to navigate the knoll comfortably to enjoy the views offered from the peak. Environmental repercussions should be investigated to determine the impact of dredging these ponds and the effect the dredged material would have when deposited at the specified locations on the surrounding reservation and it's watershed.

The river has undergone many changes since being restored from the blighted artery it once was. However, there it is still apparent that local residences, businesses and communities continue to dump debris and garbage into the Reservation that ultimately finds its way into the river. Where sewer pipes discharge directly into the Bronx River, floatable traps should be installed at each outlet to collect the garbage and prevent further pollution problems. It is vital that the County provides sufficient funding to permit the continuous monitoring and maintenance of a proper ecological balance between the river and the Reservation. Streambank stabilization and shoreline restoration measures should be taken as previously discussed above and on the attached Master Plan

2.5 Re-use Options for the Existing Gas Station Buildings

The existing abandoned gas station buildings located south of Harney Road are a perfect example of the how buildings can complement the landscape. They are comfortable in size and constructed of indigenous materials allowing the buildings to blend and accentuate the Reservation. Since being abandoned, they have become overgrown and are in need of substantial rehabilitation. Because they are situated on opposite sides of the highway, their separateness does not allow for a reasonable use that could accommodate the users of the Reservation as well as the roadway, other than the previous use as gas stations.

A recommended re-use of these buildings that would generate revenue for the Reservation and accommodate drivers and park users would be a concession oriented business offering ice cream, hot chocolate, coffee, snacks etc. to both the users of the Reservation and the roadway. The building on the southbound side of the parkway could be carefully taken apart and the building materials salvaged. The salvaged stone could then be used to construct an addition to the building located on the northbound parkway drive. Increasing the footprint would enable it to accommodate the re-use mentioned above. Additionally, a portion of the enlarged building could house additional WCPRC or Bronx River Parks & Recreation Commission staff as well as an interpretive/information center where information about the Bronx River Parkway Reservation can be made available.

2.6 Community Interaction and Involvement Programs

One of the most exciting programs made available within the Reservation to the adjacent communities is the Bike and Skate Sundays program. The parkway is shut down to vehicular traffic on several Sundays throughout the summer and bikers and/or skaters are free to travel the parkway in designated sections. It is these types of programs that create positive community interaction and participation and should be encouraged.

At some locations along the Reservation, the adjacent communities have taken it upon themselves to be responsible for 'their' section of the Bronx River Parkway Reservation. This is apparent in areas especially around the lakes of Crestwood and Bronxville, where community and memorial gardens have been planted. The original park design philosophy was developed in a style that contained rolling expanses of open meadows, forested groves of native plant species and exposed rock outcroppings that highlighted the Reservations. The addition of these community gardens has cluttered that design intent and introduced invasive species adversely impacting the Reservation's appearance.

2.7 Ongoing Reservation Maintenance and Invasive Species Control Practices

As a County Park and not a local park, the County has a certain level of maintenance it must support. The addition of the above mentioned community gardens has resulted in numerous requests for ongoing maintenance. This overburdening of limited WCPRC resources should be

curtailed. The introduction of invasive species into the Reservation from various sources and means has resulted in a plant community that dominates the landscape suffocating important native species. The most invasive species found within the Reservation that should be eliminated are as follows:

1) Norway Maple
2) Bittersweet
3) Porcelain Berry
4) Japanese Knotweed
5) Mugwort
6) Multiflora Rose
7) Kudzu
8) Euonymus alatus
9) Barberry

Additional maintenance recommendations include the following; clearing and reestablishing necessary sight lines at the intersections of the pathways with the local streets where vegetation has become overgrown, removal of plant material and vines that are climbing the parkway bridges and thinning the Reservation's forested areas of dead tree branches to promote successional understory plant growth. Where new plantings are intended, the plant material selections and installations practices should be coordinated with present maintenance practices. Finally, the Canadian Geese population is continually growing resulting in a blighted and somewhat toxic landscape. The installation of native species vegetation specifically located by County personnel along streambanks, lake edges and within open expanses of lawn would deter and disrupt the geese flight lanes, ultimately preventing their congregation within the Reservation.

III. Future of the Reservation

Since it's completion in 1925, the Bronx River Parkway Reservation has become one of the most widely visited facilities within the county. This popularity can be directly attributed to the original design philosophy of the roadway-within-a-park ideal coupled with the vigilant maintenance performed by Westchester County Parks, Recreation and Conservation Department. This facility is the standard by which all similar parkways are judged.

Due to the historical significance of this site a Phase 1A archeological study should be conducted along the entire Reservation. With such a study WCPRC could complete proposed work, design work with knowledge of where sensitive areas are. There should at least be a "predictive model" for historically sensitive areas, including any areas of old growth and indigenous species. Along the Reservation there are three areas of specific interest; the Mills, gas station and Native American Sites along the river. If a complete Phase 1A study can not be performed the three specific entities should be studied. There is also the need to create a GIS map of all easements, town and county jurisdictions and responsibilities for ownership, maintenance and license

agreements. This GIS would be utilized and updated on an on-going basis and would provide the framework for the planning of all future developments.

In coordination with the Comprehensive Corridor Management Plan (CCMP), surrounding community work groups and the recommendations in this report, WCPRC shall utilize all resources available as outlined in this report to provide them with a guide their future operational decisions. Additionally, the recommendations set forth in this report are intended to provide direction and the rational for spending County resources that can embellish the historical, cultural and environmental aspects of the Reservation.

IV. Order of Magnitude Cost Estimate

From the recommendations shown on the Master Plan drawings in Part 2, the following order-of-magnitude costs are included:

Roadway Improvements:

Lighting (assume 365 light poles)	$2,200,000
Guiderail Replacement: (assume 87.5k l.f.)	$3,500,000
Building Demo & Reconstruction: (L.S.)	$400,000
Subtotal:	**$6,100,000**

Bikeway & Pathway Improvements

Signage:	$70,000
Crosswalks:	$50,000
Roadway Striping and Signage:	$100,000
Pathway Improvements:	$700,000
Subtotal:	**$920,000**

Landscaping and Soil Erosion Measures

Clearing and Grubbing Invasives:	$250,000
Streambank Stabilization:	$400,000
Pond Dredging:	$3,000,000
Site Furnishings:	$100,000
Misc. Landscaping:	$800,000
Subtotal:	**$4,550,000**

Subtotal:	**$11,570,000**
Contingency @ 15%	$1,735,000
Total:	**$13,305,000**
Say:	**$13,300,000**

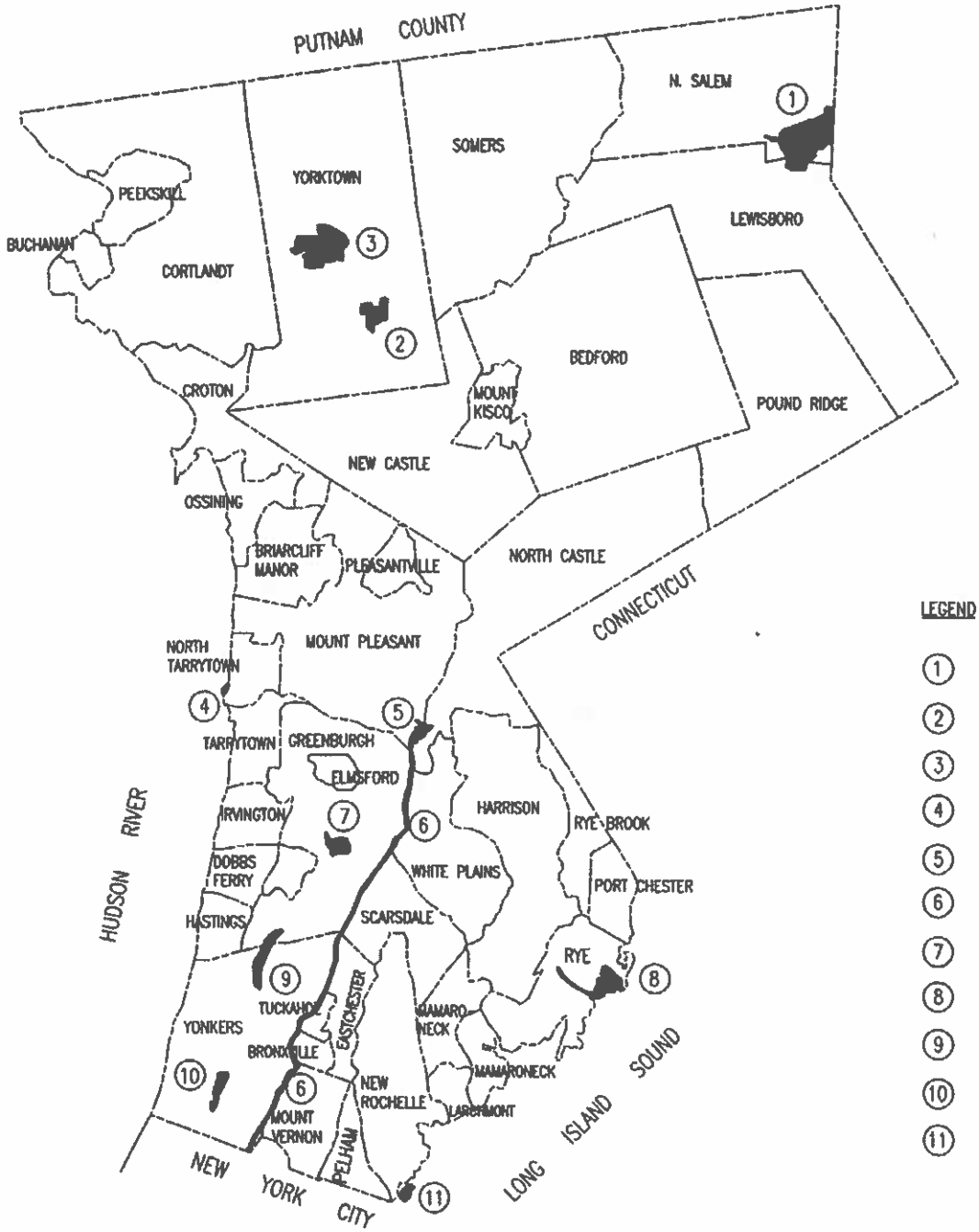
Average Construction Cost To Implement All Recommendations:
Per Linear Foot Of Parkway — $150/l.f.
(Total Linear Feet = 87,500 (16.5 miles))

PARKS
WESTCHESTER COUNTY

KENSICO DAM PLAZA

KENSICO DAM PLAZA

PARKS
WESTCHESTER COUNTY



LEGEND

1	MOUNTAIN LAKES PARK
2	LOCH LEDGE GOLF COURSE
3	MOHANSIC GOLF COURSE
4	KINGSLAND PARK
5	KENSICO DAM PLAZA
6	BRONX RIVER PARKWAY
7	RIDGE ROAD PARK
8	PLAYLAND PARK
9	SPRAIN RIDGE PARK
10	TIBBETTS BROOK PARK
11	GLEN ISLAND

LOCATION PLAN
NOT TO SCALE

KENSICO DAM PLAZA PARK

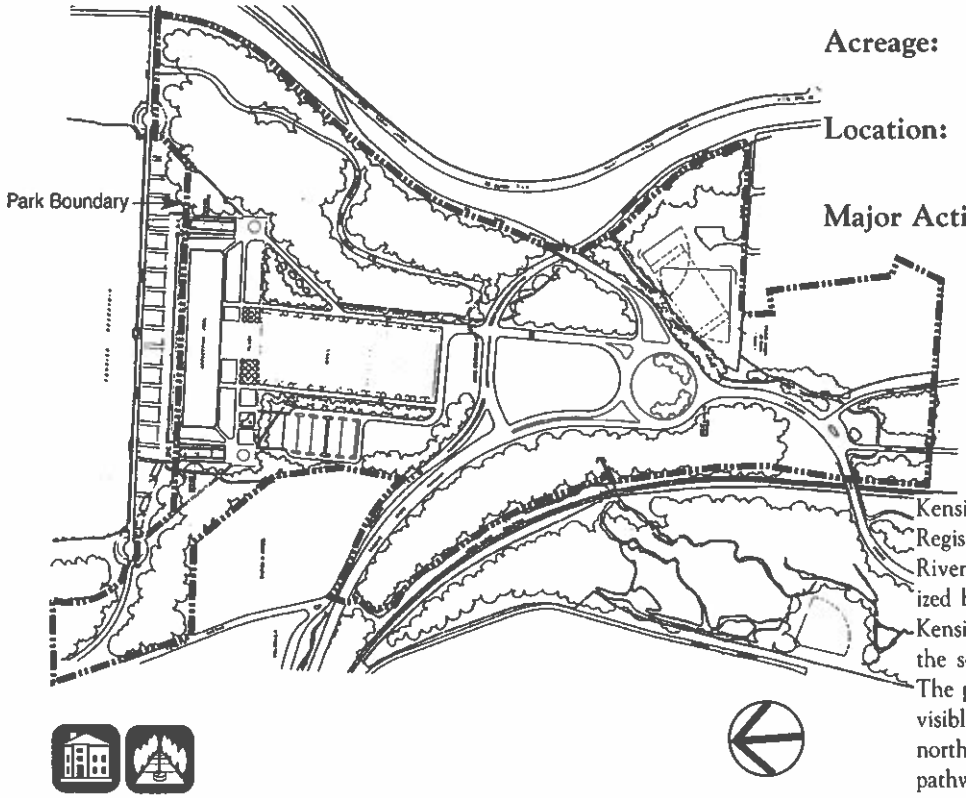
PARKS
WESTCHESTER COUNTY

Date Acquired: *1963*

Acreage: *98 Acres*

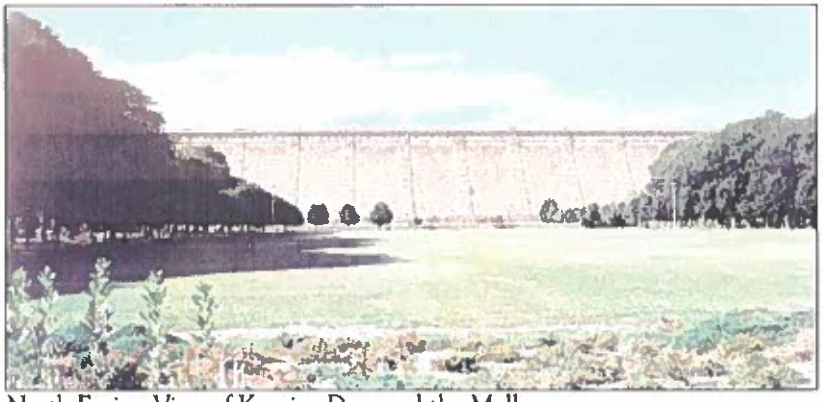
Location: *North Castle/ Mt. Pleasant*

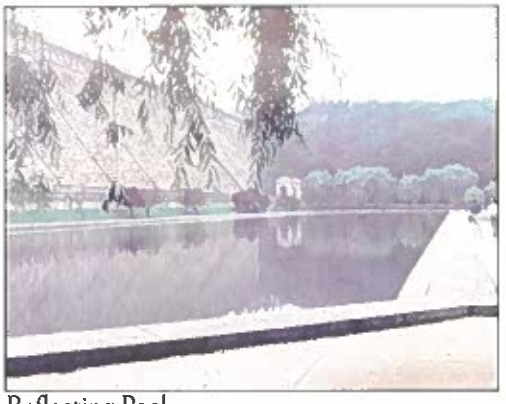
Major Activities:
- *roller/in-line skating*
- *ice skating*
- *bicycling*
- *walking*
- *picnicking with playground*
- *concession/refreshments*
- *events/concerts*



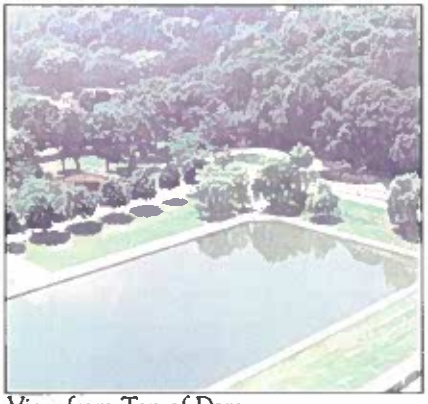
Map

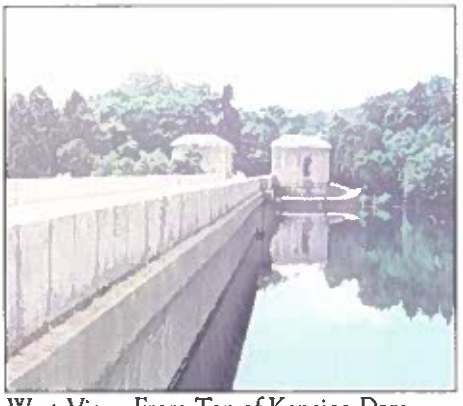
Kensico Dam Plaza is listed on the National Register of Historic Places as part of the Bronx River Parkway Reservation. This park is characterized by a large formal central mall set in front of the Kensico Dam. A reflecting pool further strengthens the sense of formality in the built environment. The park is surrounded by a road network, highly visible and easy to access. The park lies at the northern terminus of the Bronx River Parkway and pathways into and out of the park connect with alternative transportation routes.


North Facing View of Kensico Dam and the Mall


Reflecting Pool


Fountain/Pools at Base of Dam


View from Top of Dam


West View- From Top of Kensico Dam

KENSICO DAM PLAZA

I. Introduction

1.1 Introduction and History

At the northern terminus of the Bronx River Parkway at the foot of the Kensico Reservoir's formidable Kensico Dam lies this 98-acre park which is part of the Bronx River Reservation. The dam, which is 300 feet tall and 1,830 feet long, forms the Kensico Reservoir and was a feature of the original design of the Bronx River Parkway. The Reservoir property is adjacent to the quarry at Cranberry Lake Park, where stone for the Dam was originally extracted. Located in the towns of North Castle and Mt. Pleasant, the plaza was built in 1915 when the dam was completed and was acquired from the New York Watershed Commission in 1963. The park features a long reflecting pool with flanking cascading fountains where model boat use is very popular, an expansive lawn area used for large scale events, a concession/office/comfort station building, a parking lot, picnic area and a new playground. The Bronx River Pathway leads directly into the park. Both the Dam and the Plaza are part of the Bronx River Reservation and their unique character was significant to the Bronx River Parkway Reservation's listing on the National Register of Historic Places.

II. Park Issues and Recommendations

2.1 Initial Views to the Park

The monumental scale of Kensico Dam Plaza is unique in its distinct ability to impact both park users and non-users alike. The design approach used for improving this section of the park addresses the user's need for a clear sense of entry into and circulation around the park. Kensico Dam Plaza is situated at the confluence of several major roadways also provides an opportunity for a unique visual experience for non-park users who are simply passing through the site.

Approaching from the south, there are two views of the park. The first sighting comes as barely a glimpse of the top of the dam - enough to stir a bit of interest and curiosity - afforded to bicyclists, pedestrians and vehicle passengers traveling across the Lafayette Street Bridge. The second, more dramatic view is at a vantage point a short distance around a bend in the road, where a sense of the dam's full height and breadth has been obscured by secondary growth in the traffic circle.

Landscape improvements within the traffic circle will visually frame the dam from this viewpoint, punctuate the major design axis of the dam plaza and link the entire site - from the dam to the traffic circle - in one dramatic 2,000 foot gesture. These improvements include removing unintended growth within the traffic circle, extending the existing alleè all the way into the circle with strategic openings provided through the major plantings for viewing the dam.

Approximately one-third of the way around the traffic circle there is an opportunity to create one of several gateways into the park. New plantings and signage at this point will provide both a

sense of entry into the park and an immediate separation from the highway landscape for vehicle passengers.

From both the north and south directions on Rt. 22, the majesty of the dam is quickly revealed as this road pierces the Great Lawn at its mid section. Improvements to both WCPRC and DOT facilities will have beneficial impacts on both park users as well a on those traveling through the site.

Recommended park improvements along the Rt. 22 corridor include the addition of formal tree plantings combined with other vertical elements such as decorative park lighting or a series of flagpoles. This would quickly announce to the driver that they are passing through a special place. Better directional signage would improve connections between Rt. 22, the Bronx River Parkway and the Taconic State Parkway. A beginning/ending Bronx River Parkway mile marker should be added at the oval.

Improvements to the highway along the Rt. 22 corridor include provisions for traffic calming to increase pedestrian/bicycle safety and to reinforce the park setting. Various traffic calming options include:

- provisions for a new pedestrian actuated traffic signal at the present park entry intersection; and
- repavement of the portion of Rt. 22 that passes through the park with unit pavers or rumble strips to create a rumbling noise that would alert drivers to the change in venue.

2.2 Major Vehicular Park Entrance

The primary vehicular entrance to the park is an uncontrolled intersection where cars traveling westbound on Rt. 22 approach at significant speed from around a blind curve. Many bicyclists cross this intersection since Kensico Dam Plaza is the northern terminus of the Bronx River Bikeway. The addition of a pedestrian actuated traffic signal and a crosswalk at this intersection is essential for safety reasons. The formality of this entrance should be amplified with a more significant guardhouse that is sympathetic with the context along with additional decorative plantings.

2.3 The Great Lawn

The Great Lawn is the central focus of the Plaza. One of the largest physical open spaces in the area, it easily accommodates large-scale events and gatherings while providing a visual foreground for one of the county's most significant man-made structures. Proposed improvements further accentuate and organize the use of the space without limiting its present function.

The alignment of Rt. 22 across the mid-section of the plaza has fragmented the lawn, leaving several large areas inaccessible to the public. Visually reconnecting these segmented portions of

the site is recommended by increasing the length of the existing alleè so that it extends from the dam to the very end of the traffic circle.

Planting an additional row of trees within the alleè, along the entire perimeter of the lawn, will promote the long-term stability of the alleè. Providing several rows of trees, all at varying ages, will be particularly important as it will maintain the integrity of the alleè even during periods of replanting when some of the original trees will have reached the end of their life cycles and begin to decline. Consultation with the County's forester is also recommended

Compaction of the root zone by undirected pedestrian and vehicular access to the lawn poses a major health threat to the trees that form the alleè. There are several strategies that, when combined, will create a more organized entry to the lawn and avoid further degradation of the area. To reinforce the initial WCPRC concept of planting trees to delineate parking lanes, it is recommended that a new curb with one curb cut along the east and west park drives be constructed. Adding a decoratively paved access driveway will clearly define the point of vehicular entry to the lawn and move this activity away from sensitive root zones. The paved access driveway, along with the use of reinforced turf, will limit wear on the lawn.

Planting large areas of ground cover throughout the lawn under the alleè is also recommended for several reasons. Planting ground cover reduces the total area of lawn and offsets the need for lawn maintenance operations - particularly around sensitive root zones - throughout the summer. Second, various sources suggest that Canada Geese tend to avoid areas with non-turf ground covers. Strategically placed ground cover plantings may act as a natural goose deterrent, reducing the Canada Goose population and their unpalatable side effects in the park while maintaining the open lawn for large scale events. In light of the several ways that stress impacts the lawn areas, it is highly recommended that a comprehensive turf management plan be developed as soon as possible to instigate measures to insure the lawn's ongoing vitality. Lastly, creating a contrast of ground covers and turf in areas inaccessible to pedestrians, in particular, south of Rt. 22, allows a textural picture to be painted on the ground plane that can be enjoyed at ground level, from the top of the dam, and even, perhaps, from the air.

The scale of this park allows the opportunity to provide a number of various recreational routes for walkers, joggers, and in-line skaters. Recommendations include the reconstruction of the walkway around the reflecting pool with a material in keeping with the dam context. The reconstruction of the walkway should be done so that it would be able to accommodate walking and well as roller bladers. Recognizing that Kensico Dam Plaza is a big attraction for in-line skaters, enlarging the useable paved area at the foot of the reflecting pool as well will provide more usable space for in-line activities. Joggers can enjoy all of the park paths including the maintenance access route to the top of the dam, providing an additional fitness circuit opportunity

The size of the park also allows ample opportunity to increase the amount of quiet, shady, contemplative spaces around the perimeter of the lawn and the reflecting pool. Benches and drinking fountains in these spaces would also provide rest stops for the fitness minded. The

lighting and electrical systems in this area should be upgraded with the addition of outlets for the major ethnic festivals that occur. Additionally, the reflecting pools' proposed jets should be illuminated for heightened nighttime interest.

2.4 Natural Resource Management Areas

Vintage photos of the dam just after its completion show side slopes that are completely devoid of any vegetation. It appears that the wooded areas we now see flanking the plaza are composed of volunteers that may or may not be desirable. These areas currently however provide a more natural experience for the park user as a contrast to the formal, man-made landscape of the main plaza.

The wooded areas on both sides of the plaza require a long-term natural resource management plan. A relatively thin understory exists on these very steep slopes and provides little in terms of soil erosion protection. A continuous, sequential effort to revegetate the side slopes would include eradication of invasive plants, reintroduction of native seedlings and saplings, and installation of erosion control measures, all to improve soil quality and foster a sustainable habitat.

2.5 Access and View Corridors To/From the Top of the Dam

Intrepid park visitors use various park routes to climb from the plaza level to the top of the dam. These routes provide exercise opportunities to many residents who come to Kensico for active recreation. Others may simply wish to take in the views afforded from the top of the dam across both the reservoir and the plaza below. All of these routes to the top are in need of reconstruction. The degraded nature of the concrete steps and the brick paver roadway, as well as graffiti-tagged walls, create a sense of danger that may inhibit use of these otherwise valuable routes.

The concrete steps can meet present safety standards with the addition of handrails. If further reconstruction is desired, these steps can be removed and replaced with a more decorative and durable pavement such as granite. Soil erosion on either side of the existing steps is a result of uncontrolled stormwater flow and incorporating erosion control measures will help to stabilize these sensitive areas.

The brick roadway simply suffers from lack of maintenance. The unique paving found here is only sporadically missing. The appropriate solution is to replace it so as to retain the vintage character of this roadway although it may require some special detailing. The edge treatments such as bollards and curbs are also in need of reconstruction. It is recommended that new edge treatments also include storm water diversion methods to slow runoff and reduce soil erosion.

A major concern of WCPRC is access for maintenance vehicles to the bottom level of the dam. Various routes have been previously proposed. Some would have extensive impact on the side slopes and are not recommended. To accommodate the approximately twice-a-year needs of the

maintenance crews, it is recommended instead that an access easement through the adjacent church property be negotiated.

There is significant overgrowth along the margins of the dam, where the structure meets existing grade. Vintage photography informs us that existing grass panels defined by stone edges have been overgrown with weeds. It is recommended that the woody growth from these areas be removed and the view corridors be reopened to provide park users with yet another perspective of this grand site.

There is a pedestrian sidewalk - albeit a narrow one - alongside the two-lane roadway that runs on the top of the dam. As most drivers tend to speed through this corridor, this is clearly not a place for strolling. While this may not be WCPRC's jurisdiction, a request for traffic calming measures would increase the usability of this walkway so that visitors can enjoy the unparalleled views of the area from this vantage point.

2.6 The Park Building, Picnic Area, Playground and Parking Lot

The Park building, picnic area, children's playground and the parking lot represent a high intensity use area of the site around which a significant amount of detailed remedial work is recommended.

The building serves as a seasonal refreshment stand and provides restroom facilities throughout the year. Enlarging the footprint of and refacing the present building with a stone veneer more in keeping with the materials of the dam structure would create additional space for uses such as additional restrooms and an office space for the Bronx River Parkway Reservation's curator and/or as a WCPRC information center. It would allow the enlarged structure to better coexist with the vocabulary of the rest of the site as well. Other adaptive reuses for the building could include roller blade and bicycle rental, a registration center for classes in roller blading, ice skating, fitness training and other individually-oriented recreational uses (i.e.: yoga, etc.) appropriate for the plaza. A new, small, storage building will be needed as well. It should be sited on the western edge on the park, out of the flow of the main park's users but accessible to the maintenance staff.

The picnic area is heavily used. Foot traffic combined with the shade provided by existing trees has all but eliminated any turf ground cover in these areas. Where it is apparent that grass will not grow, a decoratively paved surface, such as brick pavers on a sand base will provide an appealing ground plane and stormwater infiltration into the subgrade.

The play equipment area would benefit from the addition of a better-defined area for the play equipment, safety surface, benches, a drinking fountain and the possible introduction of a spray shower area as well for cooling off during the summer months.

The parking lot suffers from a minor lack of cohesiveness that could easily be modified with some simple paved areas delineating paths to the building, the play equipment and picnic areas,

and to the Great Lawn. Additional strategic signage is recommended to announce the amenities available to visitors and to direct them towards the various locations. A paved area and screen fencing would organize the dumpsters and keep views of unsightly trash to a minimum. Additionally evergreen planting should be provided to screen the electric transformer area.

2.7 General Park Improvements

The improvements throughout the park, according to the master plan, fall into the sixteen recommendations as follows:

- Enhance view of dam;
- Create preliminary gateway;
- Major entry to Kensico Dam Plaza with connection to the Bronx River Bikeway;
- Enhance vehicular entry to great lawn;
- Augment existing allee;
- Natural resource management in all naturalized areas;
- Repave existing brick road;
- Reconstruct existing stairs to top of dam;
- Reconstruct inner path around reflecting pool;
- Reconstruct pavement for roller blading;
- Remove vines and overgrowth from dam margins and re-activate three existing jets in reflecting pool
- Provide access to bottom of dam for maintenance vehicles;
- Enhance/expand play equipment area;
- Replace and expand existing park building to provide additional interior space for enlarged restrooms, WCPRC and BRPC uses;
- Provide additional pavements for heavy use locations;
- Increase plantings for all lawn areas.

III. Order of Magnitude Cost Estimate

From the recommendations shown on the plan, the following order-of-magnitude costs are projected:

Recommendation 1 Improvements:	
Shrub removal:	$9,000
Additional plantings:	$14,000
Subtotal:	**$23,000**

Recommendation 2 Improvements:	
Formal plantings:	$4,000
Signage:	$5,000
Subtotal:	**$9,000**
Recommendation 3 Improvements:	
Pedestrian friendly intersection:	$150,000
Additional plantings:	$2,000
New entry building:	$80,000
Planted median:	$150,000
Reconfigured brick path to top of dam:	$30,000
Subtotal:	**$412,000**
Recommendation 4 Improvements:	
Vertical vehicle circulation indicators:	$24,000
Subtotal:	**$24,000**
Recommendation 5 Improvements:	
Allee augmentation:	$30,000
Groundcover planting:	$135,000
Subtotal:	**$165,000**
Recommendation 6 Improvements:	
Clearing and grubbing invasives:	$90,000
Slope stabilization:	$180,000
Replant with native vegetation:	$180,000
Subtotal:	**$450,000**
Recommendation 7 Improvements:	
Rehabilitate brick road:	$55,000
Construct paving edge, fencing and bollards:	$25,000
Subtotal:	**$80,000**
Recommendation 8 Improvements:	
Reconstruct stairs to top of dam:	$54,000
Add handrail to stairs:	$31,000
Additional plantings:	$150,000
Slope stabilization:	$6,000
Subtotal:	**$241,000**
Recommendation 9 Improvements:	
Reconstruct inner path with unit pavers:	$260,000
Subtotal:	**$260,000**

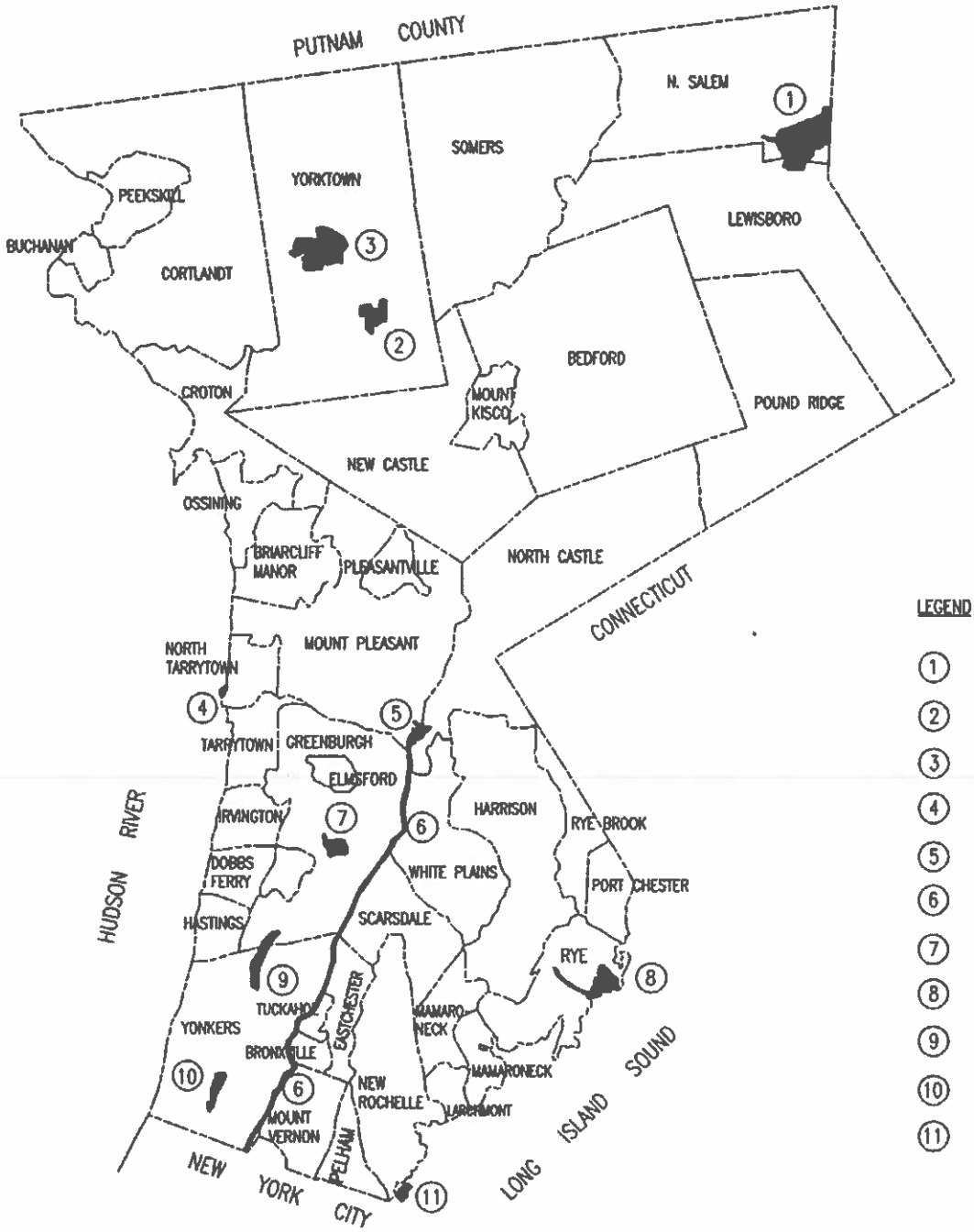
Recommendation 10 Improvements:	
Reconstruct pavement for bladers and skaters:	$125,000
Subtotal:	**$125,000**
Recommendation 11 Improvements:	
Clearing and grubbing invasives:	$10,000
Reactivate water jets:	$50,000
Subtotal:	**$60,000**
Recommendation 12 Improvements:	
Access easement and road to bottom of dam: (construction costs only – excludes acquisition and legal fees)	$40,000
Subtotal:	**$40,000**
Recommendation 13 Improvements:	
Expand play equipment & add safety surface:	$80,000
Additional benches:	$25,000
Additional drinking fountains:	$25,000
Subtotal:	**$130,000**
Recommendation 14 Improvements:	
Expand and reclad park concession building:	$350,000
Subtotal:	**$350,000**
Recommendation 15 Improvements:	
Additional decorative pavements for picnic area, park building and pathways from parking area:	$560,000
Subtotal:	**$560,000**
Recommendation 16 Improvements:	
Extend allee:	$35,000
Replace turf with groundcover:	$155,000
Street trees on Broadway:	$20,000
Subtotal:	**$210,000**
Subtotal:	**$3,139,000**
Contingency @ 15%	**$470,000**
Total:	**$3,609,000**
SAY	**$3,600,000**

PARKS
WESTCHESTER COUNTY

MOUNTAIN LAKES PARK

MOUNTAIN LAKES PARK

PARKS
WESTCHESTER COUNTY



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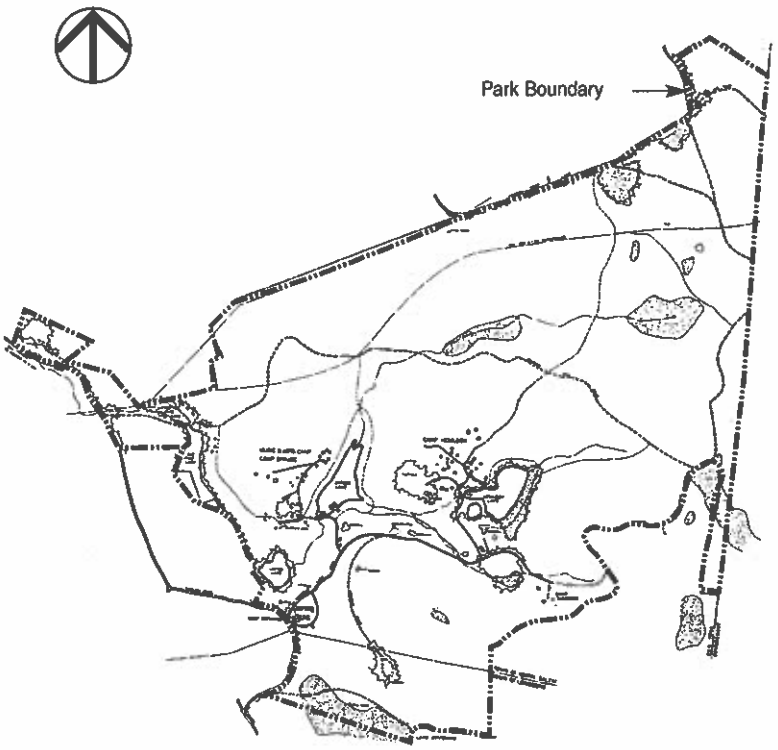
LOCATION PLAN
NOT TO SCALE

MOUNTAIN LAKES PARK

PARKS
WESTCHESTER COUNTY



Date Acquired: *1959*

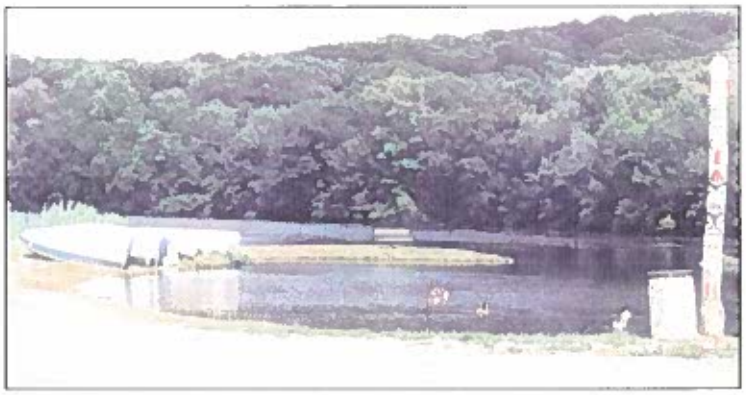
Acreage: *1083 Acres*

Location: *North Salem/Lewisboro*

Major Activities:
- *picnicking*
- *swimming lake and pool*
- *camping*
- *hiking/walking*
- *fishing*
- *boating*
- *cross country skiing/ice skating*
- *ballfield*
- *nature study*
- *birding*

The park is characterized by the rugged landscape found throughout the park. The native hardwood forest occurs on steep slopes and rock outcrops. Cabins and rustic buildings lie within the former camp area. Trails and carriage roads take you through the woodland, around lakes and up to Mt. Bailey, the highest point in Westchester. Originally a boys camp and a girls camp, the park is now used by families for camping and can be rented for group activities and events.

Map



Hemlock Lake- used for Boat Rentals and Fishing

Typical Cabin Structure

Pool- used by Groups

Spruce Lake- used for Swimming and Sunbathing

MOUNTAIN LAKES PARK

I. Introduction

1.1 Location, Background and General Description of Existing Facilities and Issues

Situated in northeast Westchester County in the towns of North Salem and Lewisboro, beautiful Mountain Lakes Park is a forested facility acquired by the County in 1961. This 1,083-acre park is named for the four lakes it encompasses and is the site of a former summer camp operated by the County. The park currently offers cabin, dormitory, lean-to and tent style camping for individuals, families and groups. Other activities found here include fishing, ice fishing and skating, boat and canoe rentals, hiking, picnicking, ball fields, ski touring, snow-shoeing, lake and pool swimming and nature study.

Rich in history, the significant lack of development and the environmentally sensitive areas all contribute to the archeological and historical sensitivity at Mountain Lakes Park. The park offered sleep-away summer camping from 1965 until 1994. The park now operates with day programs facilitated through two out-sourced providers during the summer weeks. The general public is permitted in to use the rustic facilities on the weekends. Both of the park's dining halls are popular to groups for rental. There is a first aid building and two pavilion structures. The Hemlock Camp site also has a swimming pool and a ballfield available for the use of the campers and groups on a reservation basis. There are a number of critical infrastructure issues that need to be addressed for the proper functioning of the Park.

Potable Water Supply
The water supply system is a gravity system of pipes running along top of the ground fed from a tank located on top of one of the mountains. It is inadequate, antiquated, unsightly and in need of constant maintenance. Since it is on the surface, it must be drained each fall thus precluding the camp's possible year-round operation.

Access
The Park entrance is not on or close to a major road and its remote location in the northeastern corner of the county limits potential visitation. This situation, though, helps to maintain the Park's rustic wilderness character. Bicycles are currently permitted on the dirt roads of the park but not the footpaths.

1.2 History and Design Philosophy

Approach to the Master Plan
The new master plan for Mountain Lakes Park is based upon an intensive evaluation of all outdoor recreation facilities and the camp structures and support buildings for the park as well as site specific and public policy discussions with Park operators, service personnel and the officials and staff of WCPRC. In summary, the separate conditions survey evaluation report concluded that almost all 116 existing structures except for Laurel Lake Lodge and existing Park Residence are bordering fair to poor to very poor condition. However, with the replacement of the great

majority of these structures as well as the redevelopment of the lakefronts, trails and roads, the Park will once again function as a camp that will include:

- extended sleep-away camp for children,
- day camp for children,
- public camping for individuals and families and day park users.

Given the present County fiscal condition, the Master Plan recommends a first phase demolition and removal of all "fair and poor condition" structures and limiting the park to day use for hikers, picnickers and swimmers. Upon fiscal recovery, second phase development will call for the construction of approximately 100 new structures and upgraded outdoor facilities in the Master Plan Program.

The basics of site infrastructure (power, sanitary, water [exposed piping, drained in winter]) that is serviceable for initial future development does exist. The replacement of the above grade seasonal water system with a year-round system is now under feasibility study by a consultant to the County. In addition, the park will build on and improve its extensive trail network. The Master Plan reflects all the uses and, for the first time since the boys and girls camp days, distinguishes distinct areas for separate uses.

1.3 Goals of the Master Plan

The main goal is to preserve the rustic character of the park yet provide new and upgraded amenities for multi-use activities such as trails, water activities, both remote and vehicular accessible picnic and lean-to camping areas, playgrounds for various age groups, playing fields and other general informal recreation areas. There is a need to create a more welcoming environment for all users.

1.4 Master Plan Program

A program for the construction of both new buildings and outdoor recreation facilities has been prepared through an interview process and a review of recent peak usage conditions of the park. It was determined that overnight facilities for both the children camp facilities and the public overnight camping would be based on a review of the most recent Mountain Lakes usage patterns. The most recent children day and overnight camp summer schedules were reviewed as well as the peak weekend 2001 (Labor Day and July 4th) public usage. Various projected growth factors were discussed. Although the Westchester County Day Camp is no longer operating due to budget cuts, both the North Salem Day Camp and St. Christopher's in Dobbs Ferry operate children's camps at Camp Hemlock. The program at Camp Hemlock is based on these two institution's needs as well as the intended expansion of the institutional base to include groups such as YM/YWCA's etc. The Camp Spruce facility is based upon a review of the following peak weekend times with projected growth factor of 100%.

1.5 Present Hemlock Camp and Spruce Camp Capacities

Typically, the Hemlock Camp has brought in about 250 during a peak week/weekend, the Spruce Camp has brought in about 200-250 during a peak week, the directors and/or staff population was approximately another 125 resulting in about 600-625 total camp population in a peak summer week of operation. The Mountain Lakes Park peak weekend visitors as collected by WCPRC are as follows:

July 4th Weekend 2001

Wednesday	7/4	29 Beach	25 Campers
Thursday	7/5	0 Beach*	234 Campers
Friday	7/6	0 Beach*	240 Campers
Saturday	7/7	78 Beach	103 Campers
Sunday	7/8	0 Beach*	2 Campers
Total		**107 Beach**	**604 Campers**

Labor Day Weekend 2001

Friday	8/31	0/Closed*	220 Campers
Saturday	9/1	17 Beach	267 Campers
Sunday	9/2	67 Beach	139 Campers
Monday	9/3	12 Beach	26 Campers
Total		**96 Beach**	**652 Campers**

* low numbers on beach counts = poor weather or lack of life guard coverage.

It is assumed that the weekend campers averaged a two-night stay. Hence, comparing the two 2001 peak weekends, the average number of campers was 315. After discussion with WCPRC staff, it was decided that a 100% growth factor would be appropriate given the new overnight facilities that would be made available after redevelopment thus generating a programmatic peak number of 630 weekend campers.

The type and mix of overnight facilities for Mountain Lakes Park was also determined through discussions and is presented in the table below along with the resultant camper capacity and the number of each facility type.

	% of Campers	# of Units Required
10% -Tent Sites- (2 person/unit)	64 Campers	32 sites
20% -Lean-Toos- (2 person/unit)	126 Campers	63 units (-25 exist on site) = 38 units
35%- Lodges- (20 person/unit)	220 Campers	11 units
35%- Rustic Cabins- (4 person/unit)	220 Campers	55 units
Totals:	630 Campers	136 Units

Programmed parking spaces were determined using these same peak weekend usage numbers for both the beach swimming and overnight camping. For beach users, the peak weekend average of 100 users was divided by a car occupancy ration of 3.5 persons per car times the same 100% growth factor to project 60 spaces needed. For campers, the peak weekend average of 630 users was divided and multiplied by the same factors to estimate 360 spaces. These camping parking spaces were split equally between the two clusters: 180 at Spruce and 180 at Hemlock. The Master Plan has located sufficient parking to accommodate projected volume of users of the multi-use areas within park.

II. Recommendations for Second Phase Development

The following recommendations are graphically documented on four sheets of Mountain Lakes drawings in the separate Volume II:

- The Master Plan proposes approximately 100 new structures and reflects a new layout for all buildings throughout the site and it creates a more ADA accessible environment. The new buildings are sited to utilize the existing water supply and sanitary system while new systems are under feasibility study and design. The existing systems represent a major investment and are still in adequate condition with some preventive maintenance efforts and some updating. The exception will be Laurel Lake Lodge that will remain and be improved to function as a year round rental facility for multiple short-term tenants.

- The former Spruce Camp area is designated for public day use, beach swimming and picnicking with the construction of a picnic pavilion and playground areas with new 350 person capacity dining/mess hall and rest room facilities. The former Hemlock Camp area is designated for day camp and group camp and picnic use as well as group overnight camping. Hemlock Lake rehabilitation will accommodate beach swimming as well as the addition of an outbound rustic wood versatile obstacle course which, if desired, can be configured to incorporate a variety of aquatic activities at various points along the lake's circumference. The County may seek to enter into a build/lease agreement with an institution such as the YM/YWCA for the design/build/operate of these group camping facilities.

- Utilizing existing foundations and infrastructure (septic fields) where appropriate, the demolished structures will be replaced with a mix of new lean-to's, platforms for tent sites, cabins and dining and bunkroom lodges to simplify the existing building infrastructure yet meet the users needs for appropriate overnight camping accommodations. Further analysis has determined that the most popular park facilities are: picnic pavilions, lean-tos, tent site locations, 4 person cabins and lodges. The Master Plan has evaluated the WCPRC request that the dining halls, the garage and the director's house and lodge be rehabilitated and winterized rather than demolished. The building condition inventory determined that the redesign and replacement cost for the majority of structures with more efficient, low maintenance

facilities (excluding the Laurel Lake Cottage and the Park Residence) is a more economic approach rather than extensive and costly rehabilitation of poor condition buildings. However, it is recommended that the newly constructed Main office, Spruce Lodge and Lookout Lodge buildings be insulated and heated for year-round use.

- Vehicular circulation improvements include:
  - a proposed system for peak park usage days, using the existing entry off Hawley Road at its present location and exiting the park from a separate egress approximately ¾'s of a mile northwest back on Hawley Road;
  - a drop-off and turn-around loop at Hemlock Lake for the day/group camp facilities, a second drop-off at Spruce Lake with an exit road constructed over an existing trail past the former director's quarters westward to the existing bridge/culvert separating Big and Little Pine Lakes and the presently unpaved road back to Hawley Road;
  - an additional park service entry at the northern boundary at Hunt Lane utilizing the presently unpaved road to Bailey Mountain, to include a new observation tower, and southward to Camp Tamarack and the paved road to Hemlock Lake;
  - the east/west Roaring Dam Road will remain unpaved but reshaped with item 4 gravel for emergency vehicle use and select vehicular use (card operated gates) to remote camping, hiking, and wetland/lake areas of the Park;
  - Laurel Lake Lodge is currently the only winterized structure in the Park. The Master Plan has located additional lodges, based on the successful model of Trail Lodge at Blue Mountain throughout the Park at more desirable areas such as lake-side, along view-sheds and within more private/remote areas of Park. The Laurel Lake area provides sites for 2-3 more lodges.

- Based on the outcome of the County's separate study and design of the park's potable water supply and distribution system, the Master Plan recommends that new year-round internal supply tanks provide gravity-fed water to all new dining and bunkroom lodges, camp offices and toilet buildings. Sanitary collection and treatment will be via percolation galleys, where feasible, and holding tanks, where not.

- The Master Plan recommends taking full advantage of the site itself, the highest point in Westchester County. The plan proposes observation tower for various uses and possibly additional lodge getaways that take advantage of the site's open view-sheds and remote locations.

- Lakes are one of the most popular attractions at the park. The Master Plan reflects an expansion of Hemlock Lake to create a new beach that will accommodate future beach and water activities. A set of new multi-use nature trails will be developed

throughout the park. They will create some new, more remote camping and getaway lodge site opportunities for year-round use. The Hemlock Camp existing pool will be upgraded to provide better instructional and recreational swimming opportunities.

- The expansion of the Mountain Lakes trail system will be designed for multiple use (hiking, running, mountain biking and cross-country skiing). Their actual location will be determined in the field utilizing a team approach with representatives of all user groups and environmental staff and civic groups. The trail location concept is for a perimeter trail system which stays out of sensitive areas with access from existing park roads.

- Security throughout the park is an issue that is addressed in the Master Plan. The Plan recommends that proper lighting be provided at the main entrance. Individual and group overnight camp facilities and entrances to user-fee areas and the maintenance back road will be secured with the addition of a card control gate system.

III. Mountain Lakes Revenue Generating Opportunities

The Park currently generates approximately $90,000/year in revenues. This includes $18,000-$20,000 per year from the North Salem Day Camp, from St. Christopher's, $100/night for Laurel Lake Lodge. The Westchester County children's day camp has been cut from the County budget. In comparison, Ward Pound Ridge Reservation generates $150,000 in annual revenues. The new facilities shown in the Master Plan will be a reflection of the needs of the major revenue producers for the park.

IV. Mountain Lakes Park Capital Improvement Plan.

The Master Plan suggests phasing the proposed needs of the park for the purpose of future planning and development. After removal of most of the existing buildings, the first phase of new facility development should incorporate all the public revenue generating programmatic elements as follows:

- cabins and lodges,
- all group and camp activities such as mess halls,
- public use accommodations,
- swimming activities and expanded beach,
- multi-use buildings for crafts, nature preserve,
- picnicking facilities,
- infirmary
- infrastructure
- security
- activity course and other various activities such as multi-use trails system.

The second phase of new facility development should incorporate all maintenance and staff oriented facilities and others as follows:

- service uses such as maintenance buildings,
- staff uses including offices,
- amphitheater
- fire bowl at Spruce Camp
- lighting.

The third phase of development should incorporate all areas of new development. These areas are as follows:

- any construction outside existing areas of development such as lodges and camp sites located off the new northeast multi-use nature trail network.
- new observation tower at Bailey Mountain.

V. Mountain Lakes Park Maintenance Program

Some of the major problems that currently exist are the result of major erosion and the park not having an overall maintenance plan to keep up with the general user and building maintenance requirements of the Park. A Maintenance Program should be developed for the upkeep and overall maintenance of the park and the future activities of the campgrounds. The Master Plan proposes approximately 100 new structures and associated infrastructure including lean-toos to replace over 116 existing structures in poor condition. This new construction approach plus the reduction in the number of park structures along with their proposed compact configuration is to confront head-on the current spiraling maintenance and repair costs of the Park facilities.

VI. Mountain Lakes Development Costs

The following order-of-magnitude development cost estimates are broken down by phase and location as shown on the Master Plan drawings in Part 2:

• **First Phase**	
Demolition and Removal of Buildings	$300,000
Subtotal	**$300,000**
• **Common Facilities**	
Laurel Cottage, lodge at Lookout Point, Road Signage	$85,000
Support Facilities:	
Main Park Office, Superintendent's Quarters, Main Maintenance Bld., Infirmary	$360,000
Peripheral Camping Facilities:	
Tent and Lean-to Sites, Multi-Use Lodge, Toilet Buildings	$635,000
Recreational Facilities:	
Amphitheater, Observation Tower	$100,000
Subtotal	**$1,180,000**
• **Infrastructure**	
Water Supply and Distribution System	$1,500,000
Sanitary System Upgrades	$1,000,000
Gravel, Paved, and Woodchip Walkways, Foot Bridges	$517,360
Rolled Gravel and Paved Roadways, Vehicular Bridges	$1,515,750
Entrance Improvements	$15,000
Subtotal	**$4,548,000**
• **Hemlock Camp**	
Camping Facilities:	
Lean-to Sites, Rustic Cabins, Toilet Buildings	$1,035,000
Main Buildings:	
Hemlock Lodge, Bunk Bedroom Lodges, Pavilion	$680,000
Support Facilites:	
Camp Maintenance Building, Camp Office, Staff/Cook's Quarters	$270,000
Lakefront Facilities:	
Boat House, Beach, Docks, Beach Storage	$170,000
Outdoor Recreation Facilities:	
Pool Upgrade, Pool Pavilion, Picnic Areas, Playground, Playing Fields, Basketball Court, Obstacle Course	$397,500
Infrastructure:	

Stone Screening Areas, Parking Lots, Landscape Treatments/Prep.	$380,100
Subtotal	**$2,953,000**

- **Spruce Camp**

Camping Facilities:	
Lean-to Sites, Rustic Cabins, Toilet Buildings	$1,010,000
Main Buildings:	
Spruce Lodge, Bunk Bedroom Lodges, Pavilion	$740,000
Support Facilities:	
Camp Maintenance Building, Camp Office, Staff/Cook's Quarters	$270,000
Lakefront Facilities:	
Boat House, Beach, Docks, Beach Storage	$138,000
Outdoor Recreation Facilities:	
Playground, Firebowl, Picnic Areas	$122,500
Infrastructure:	
Stone Screening Areas, Parking Lots, Landscape Treatments/Prep.	$79,000
Subtotal	**$2,359,000**

- **Camp Tamarack**

Pavilion, Toilet Building, Parking Lot	$71,000
Subtotal	**$71,000**

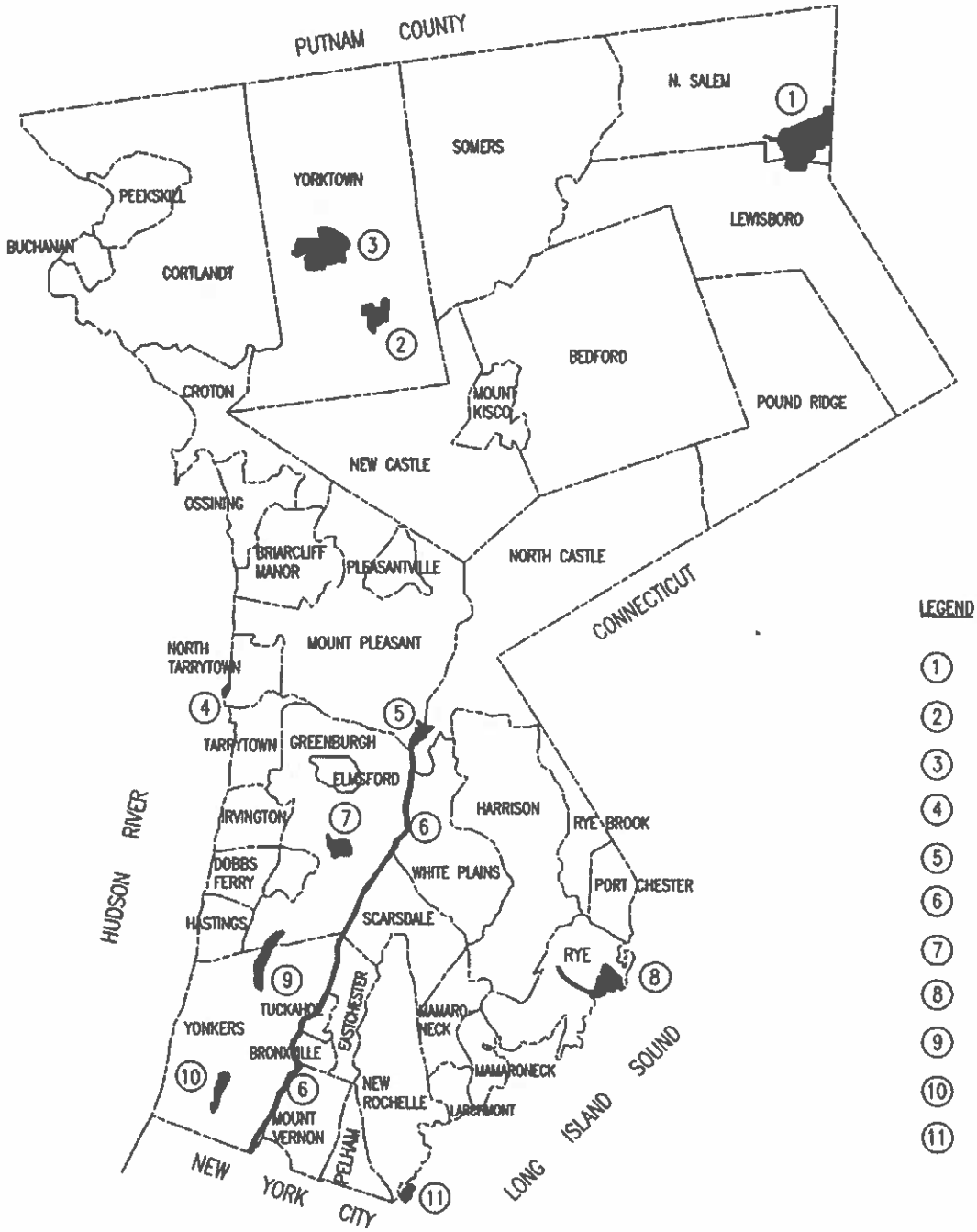
Subtotal	**$11,400,000**
Contingency @ 15%	**$1,710,000**
Total	**$13,110,000**
Say	**$13,000,000**

PARKS
WESTCHESTER COUNTY

KINGSLAND POINT PARK

KINGSLAND POINT PARK

PARKS
WESTCHESTER COUNTY



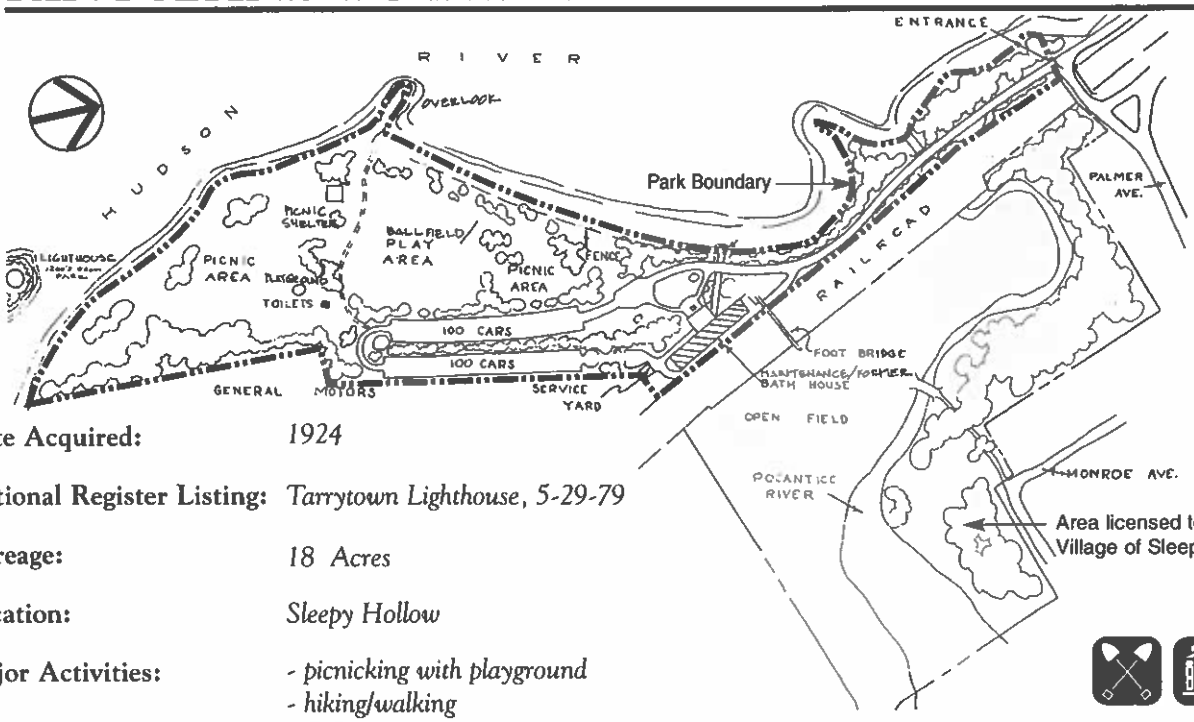
LEGEND

1	MOUNTAIN LAKES PARK
2	LOCH LEDGE GOLF COURSE
3	MOHANSIC GOLF COURSE
4	KINGSLAND PARK
5	KENSICO DAM PLAZA
6	BRONX RIVER PARKWAY
7	RIDGE ROAD PARK
8	PLAYLAND PARK
9	SPRAIN RIDGE PARK
10	TIBBETTS BROOK PARK
11	GLEN ISLAND

LOCATION PLAN
NOT TO SCALE

KINGSLAND POINT PARK

PARKS
WESTCHESTER COUNTY



Date Acquired: *1924*

National Register Listing: *Tarrytown Lighthouse, 5-29-79*

Acreage: *18 Acres*

Location: *Sleepy Hollow*

Major Activities:

- *picnicking with playground*
- *hiking/walking*
- *fishing*
- *ballfields*
- *historic lighthouse*
- *nature study*
- *sailing club*

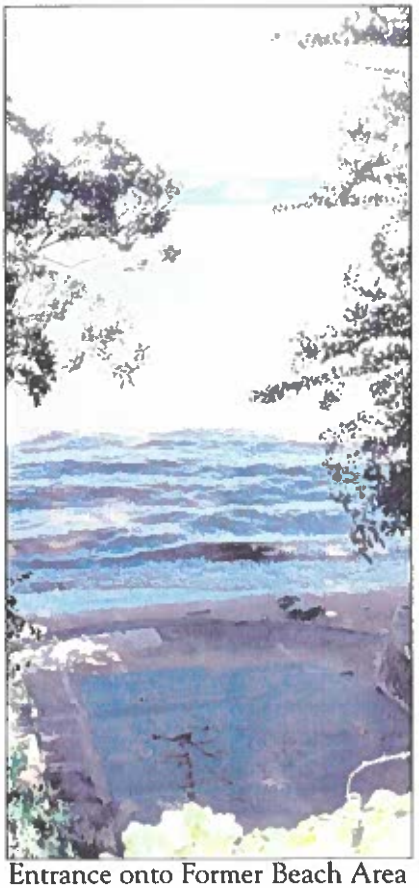
Kingsland Point Park is situated along the Hudson River shoreline just north of the Tappan Zee Bridge. The site enjoys splendid views of the Hudson River. The landscape consists of mostly lawn area under large shade trees. The park borders the former General Motors plant and the railroad to the east and the river to the west.

Map

South View of Light House from Overlook

Views from Picnic Grove Areas

Hudson River Shoreline



Entrance onto Former Beach Area

KINGSLAND POINT PARK

PARKS
WESTCHESTER COUNTY

I. Introduction

1.1 Location

Kingsland Point Park is an 18 acre park that was one of the original parks developed by the Westchester County Parks Commission. It is located on the eastern shore of the Hudson River at the mouth of the Pocantico River in the Village of Sleepy Hollow.

1.2 Description and History

Kingsland Point Park was named after Ambrose C. Kingsland, a shipping magnate. The mansion where he resided no longer stands in the park today; only foundation remnants exist. In 1898 the point was donated to North Tarrytown. Westchester County Parks then acquired the Park in 1925 and built the Bathhouse in 1926. That year the Park was opened to the public. The Park caters to activities such as hiking, walking, and fishing. Also offered are reserved and open family picnic areas, ball fields, playgrounds, a former bathhouse that is currently used for boat storage and office and maintenance space, and the historic Tarrytown Lighthouse at Kingsland Point, listed on the National Register of Historic Places since May 29, 1979. The topography of Kingsland Point Park is fairly flat. This unique park, which lies directly on the Hudson River, has spectacular viewing areas including southern views to the Tappan Zee Bridge.

This facility was once one of the most actively used parks in the County system but has been surpassed by some of the newer and larger County facilities. The beach facility had been a popular swimming site but has been closed to that activity since the late 1970's. Due to the presence of the Pocantico River and the proximity of Philipse Manor and Upper Mills, there is strong archeological potential at Kingsland. The age and unique location of Kingsland Point lend to its consideration as an historic landscape.

Kingsland is only accessible from the Palmer Avenue Bridge over the Metro-North Railroad tracks. A park pass is required for admission. Portions of the Park are adjacent to a recently closed General Motors plant. An obsolete pedestrian footbridge crosses the tracks but is no longer serviceable and needs to be removed. A concession building near the water's edge was removed in 1989 when the seawall was rebuilt. A viewing area was installed in its place offering a sweeping vista of the Hudson River and the Tappan Zee Bridge to the south. The park shares its maintenance staff with Croton Point Park, 6 miles to the north. This staff also occupies a portion of the bathhouse for its maintenance operations and offices.

The bathhouse is a large two-story structure constructed of stone, concrete, and stucco, dating from 1926. The building features simple eclectic ornamentation including a large green cornice below the main roof and shaped gables at the rear. The upper level of the bathhouse is reached by steps up to a plaza and into a large open room covered with a hip roof. Large rectangular openings are located on all four facades of this space and a wood truss supports the exposed wood ceiling. Stairs lead down one level from the Park to the changing rooms. The upper level plaza, forming a short tunnel, covers the lower level entry. The tunnel ends with arched

openings with stone voussoirs at either side. The lower level has large areas of windows, many of which are now boarded up. From the changing rooms a tunnel leads to a former beach which was washed away in the 1970's.

The Tarrytown Lighthouse was in operation from 1882 until it was decommissioned in 1961. It sits on a rock outcropping and is reached by a footbridge built in the 1970's accessed by an easement through the former G.M. property. The Lighthouse consists of 6 levels, which housed the living quarters of the Lighthouse Keeper and the fog bell equipment. The lowest level is 18 feet in diameter and contains a kitchen, dining room and living room. The upper levels contained bedrooms and equipment. The Lighthouse is listed on the National Register of Historic Places. Public tours of the Lighthouse are offered monthly and for school groups by special appointment. Given its prestigious historical designation, and the rise in interest in historic sites, efforts should be made to rehabilitate the Lighthouse's deteriorating structure.

The picnic shelter is a simple rectangular structure with a wood roof supported on wood posts. It has a rustic quality appropriate to its setting. The comfort station is a utilitarian structure constructed of concrete block.

II. Recommendations

The park has been a tranquil getaway for many of the local residents within the adjacent communities for years. After visiting the site and researching it's current uses, the following recommendations were determined to improve the current use and overall appearance of the site. Following are the categories of improvements that should be addressed:

- Park Entrance Accessibility
- Shoreline Treatment to open views to Hudson River
- Shoreline Restoration/Beach Expansion
- Park Circulation- Pedestrian and Vehicular
- Kingsland Point Bath House
- Tarry Town Lighthouse
- General Improvements

2.1. Park Entrance Accessibility

Although the Park is quite visible from the Hudson River it is not an easily accessible park. In order for the park to expand its user visitation base to a wider area beyond the immediate neighborhoods, a pathfinder-type signage program should be developed to make the public more aware of its existence. Coordination between Sleepy Hollow and the County must occur. A number of historic and landmark sites exist within the immediate vicinity of Kingsland Point Park in North Tarrytown. Improved signage throughout should be provided to direct the visitor to all these sites. The Palmer Avenue Bridge is currently the only entrance to the park. It is a

unique and pleasant way to arrive at the Park. The entrance into the Park itself simply requires additional signage as backup.

2.2 Shoreline Treatment to Open Views to Hudson River

Upon immediately entering the Park, the visitor is faced with filtered and opened views of the Hudson River and surrounding vistas. The open views at the north entrance of park are more restricted. The shoreline edge enhances views from the Park. In order to maximize all views, the shoreline edge must be cleared of existing, invasive vegetation and the existing fence that is encompassed in various areas by this vegetation. All steep slopes should be replanted with non-invasive, erosion control groundcover and low plantings.

2.3 Shoreline Restoration/Beach Expansion

The existing beach was once the major attraction to the Park. Unfortunately the beach was closed in 1970 due to lack of use, a reduction of usable beachfront and natural, long-term erosion. A New York State beach study is in progress for several beachfront properties along the Hudson, and this Master Plan suggests redeveloping the beach for recreational activities including swimming. Preliminary studies by another consultant suggest that the water quality conditions at the General Motors site may be suitable for swimming. However, the existing beach is quite narrow and is not suitable for recreational purposes at present. However, it is feasible to develop a beach suitable for recreational purposes by using beach nourishment techniques. Such techniques include the use of beach retention structures such as terminal groins in order to provide a more stable beach configuration with lower maintenance costs. Technical issues and data requirements for the beach design include the following:

- Bathymetric and topographic surveys of the beach and near-shore areas;
- Estimates of the natural long-term erosion rates for the study area, based on comparative analysis of historical bathymetry, maps and aerial photos;
- Information on local currents and circulation patterns, based on current measurements;
- Analysis of wave conditions during storms and estimate of the corresponding 'depth of closure;
- Identification of sources, grain size characteristics and costs for alternative sources of high quality sand for beach fill.

2.4 Pedestrian and Vehicular Park Circulation

There is currently one paved path in the Park for pedestrian and maintenance use that bisects the active areas from the passive areas and directs the user to the viewing area. There is lack of defined pedestrian paths and circulation, which have left the Park worn down and overused at the playing fields. Connections are desired throughout the picnic areas and routes to the lighthouse. The Master Plan recommends the addition of rolled gravel paths to alleviate this condition. The width of new paths should range from four to seven feet. Wider paths will be located in appropriate areas to accommodate maintenance vehicles. The paths should be designed to

connect the Park with all surrounding points of interest at its north and south terminus. Pedestrian connections will include:

South Connections to:

- General Motors Property
- Barnhart Park
- Beekman Avenue
- Sleepy Hollow Landing Park
- Patriots Park

North Connections to:

- Historic Philipse Manor
- Peabody Field-Nature Trail
- De Vires Park
- Philipsburg Manor Historic Landmark Site

Vehicular traffic is restricted to the north portion of the Park. Currently, the entrance road passes through the maintenance and service area. The existing circulation is straightforward yet undesirable due to the mix of service uses. The Master Plan simplifies the circulation by separating the visitor traffic flow from the maintenance area. It provides a drop off area for the Bathhouse and the boat rental area. The Park has two accessory parking areas that are frequently full. The Master Plan does not recommend any newly paved parking areas; rather, it provides an overflow parking area located just east of the playing fields for additional parking demand.

2.5 Kingsland Point Bathhouse

I. Introduction

This report records observations of the existing architectural features, materials and activities at the Kingsland Point Park Bathhouse in October 2001. General repair recommendations are offered to remedy existing conditions, which are deemed essential in maintaining the long-term stability of the Bathhouse.

II. Overall Appraisal

Developed in 1926, the Bathhouse appears to have some historic significance in North Tarrytown. Constructed of stone, concrete and stucco, and featuring simple eclectic ornamentation, the Bathhouse is not ADA complaint and in poor condition. This large two-story structure has not been properly maintained in over 30 years.

III. Re-Use Recommendation

We recommend that the Bathhouse be restored to its original state as a functioning Bathhouse with changing rooms and toilets as well as incorporating an adaptive re-use potential of serving as a multi-functional building. (See section VII).

IV. Conditions Ratings

The following rating criteria were used:

- Excellent: Component or system is in "as new" condition requiring no rehabilitation and should perform in full accordance with its useful expected life;
- Good: Component or system is sound and performing its function. Although it may show signs of normal wear and tear, some minor rehabilitation work maybe required;
- Fair: Component or system is performing adequately at this time but exhibits deferred maintenance, evidence of previous repairs, workmanship not in compliance with commonly accepted standards, is obsolete, or is approaching the end of its typical useful expected life;
- Poor: Component or system has either failed or cannot be relied upon to continue performing its original function as a result of having exceeded its typical expected useful life, excessive deferred maintenance, or state of disrepair. Present condition could contribute or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

V. Existing Conditions And Renovation Recommendations

A. Main Level (Exterior)

Observations:

- There are numerous patches of biological growth on the exterior masonry walls of the Bathhouse *(fig. A-13)*.
- Large areas of windows on the main level are boarded up on all sides of the building *(fig. A-1, A-11, A-12, A-14)*.
- There are numerous structural cracks along the exterior walls and doorframes of the Bathhouse *(fig. A-13)*.
- The large green cornice ornamentation below the main roof is split, chipped, peeling and in very poor condition *(fig. A-3)*.
- The vaulted archway connecting the east and west portions of the building is in poor condition and has vertical cracks around its entrance archway *(fig. A-14)*.
- The concession space on the main floor is improperly boarded up with fungi infected wood.
- The recent small office building addition to the north end of the Bathhouse is a single story functional structure with no sensitivity to the hipped roof, arched openings design of the 1926 Bathhouse.
- The surrounding site appears unkempt *(fig. A-1)*.

Recommendations:

- A thorough inspection of the roof and its immediate repair and restoration is recommended.

- A thorough analysis of the exterior walls and their original eclectic ornamentation by a restoration specialist is also recommended.
- Repair cracks in exterior masonry using stainless steel anchors set in epoxy and seal joints to match surroundings.
- Remove all biological growth from masonry using a low-pressure washer.
- Remove all rubbish from the surrounding site and leave clean on a daily basis.
- Remove all existing boards covering windows and reglaze where necessary.
- Demolish the small office building addition at the north-end of the Bathhouse.
- Hidden conditions that could not be visually observed should be further investigated by an historic restoration specialist utilizing borescopes where necessary.

B. Main Level (Interior)

Observations:

- The lower level is no longer used as a Bathhouse. Half of the floor is occupied by a local sailing club *(fig. A-17)*. The other half is used for storage, which the Park superintendent emphasizes, is not a pressing need.
- There are numerous structural cracks along the interior walls of the Bathhouse.
- There is evidence of some cement patchwork on the interior walls of the main entrance to the building *(fig A-9)*.
- The vaulted ceiling at the central portion of the lower level is in very poor condition with large chunks of stucco missing from the ceiling exposing internal rusted "C" channels *(fig. A-2)*.
- The paint, which we believe contains lead, is peeling from the walls in every room due to water leaks throughout the building *(fig. A-7)*.
- The ceiling in the former office space on the lower level is falling and stained from leaks and is generally in poor condition. The lead paint in this room is also peeling *(fig. A-10)*.
- The ceilings in all of the Bathhouse's spaces are in poor condition as a result of major water leaks.
- The former women's restroom currently used for log storage is in very poor condition with dilapidated roofing, boarded-up windows and peeling paint *(fig A-7)*.
- Water is leaking from the skylight at the north wing of the Bathhouse.
- The only ADA accessible entrance to the main level, located at the east of the Bathhouse has been boarded-up and sealed for the past couple of years *(fig A-9)*.

Recommendations:

- Rehabilitate cracks in interior masonry using stainless steel anchors set in epoxy and seal joints to match surroundings.
- Replace or repair all damaged ceiling areas.
- Remove all remaining lead paint in the building.
- Refinish all floors.

- Repaint all interior walls.
- Provide liquid membrane waterproofing on all skylights.
- Replace all damaged windows and windows frames to match existing.
- Restore and re-open main east entrance to serve as an ADA accessible entryway to the main level.
- Hidden materials that could not be visually observed should be further investigated by a field specialist.

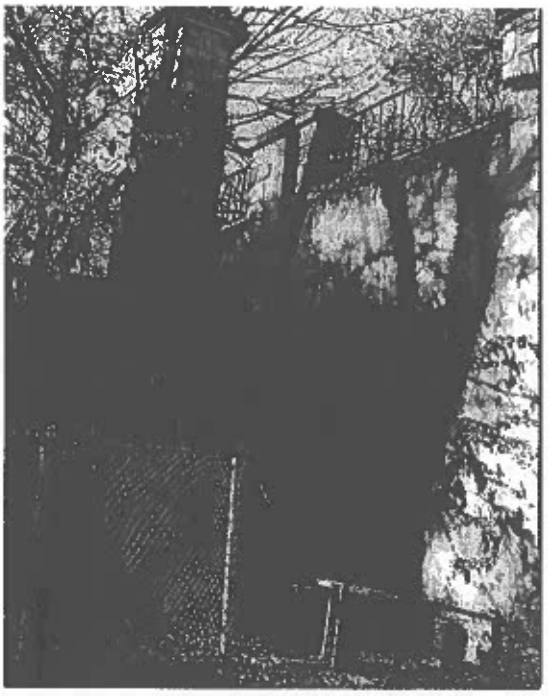
C. Upper Level

Observations:

- Reached by steps up to a plaza, a picnic pavilion originally occupied the upper level of the bathhouse. The roof is in poor condition with falling slates rendering the use of the picnic pavilion hazardous *(fig. A-16).*
- There are visible holes and openings in the roof of the pavilion.
- There is rust evident on the steel truss system of the pavilion's roof *(fig. A-5).*
- The asphalt floor of the picnic pavilion has major leakage problems and appears to never have been sealed.
- There are holes in the tar and gravel roof above the former women's dressing room. It is currently used for kayak storage and is in poor condition *(fig. A-6).*
- There are holes in the tar and gravel roof above the former men's dressing room. It is currently used for sailing storage and is in fair condition *(fig. A-8, A-15).*
- The second floor can only be accessed from grade and is not ADA compliant.
- The surrounding site is littered with rubbish and appears unkempt.

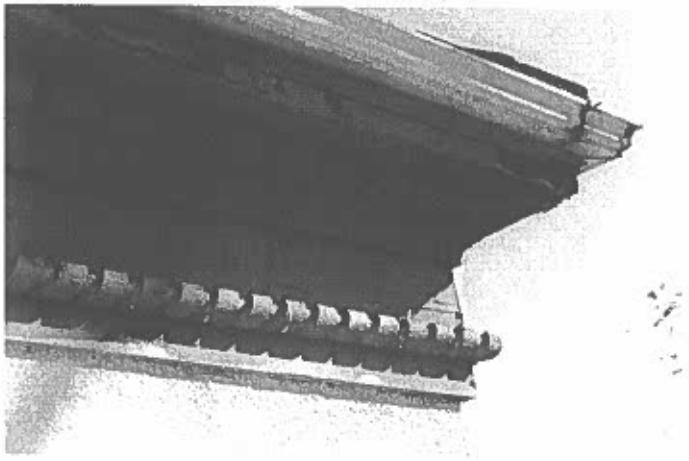
Recommendations:

- A thorough structural inspection of the roof and its immediate repair and restoration is recommended.
- A thorough analysis of the exterior walls and eclectic ornamentation by a restoration specialist is also recommended.
- Repair cracks in masonry using stainless steel anchors set in epoxy and seal joints to match adjacent materials and paint colors.
- Seal holes in tar and gravel roof above kayak and sailing storage. (See Section VI for its adaptive re-use potential).
- Remove rust from steel truss system in picnic pavilion and coat with a rust-inhibiting paint.
- Remove all rubbish from the surrounding site and leave clean on a daily basis.
- Hidden conditions that could not be visually observed should be further investigated by an historic restoration specialist utilizing borescopes where necessary.



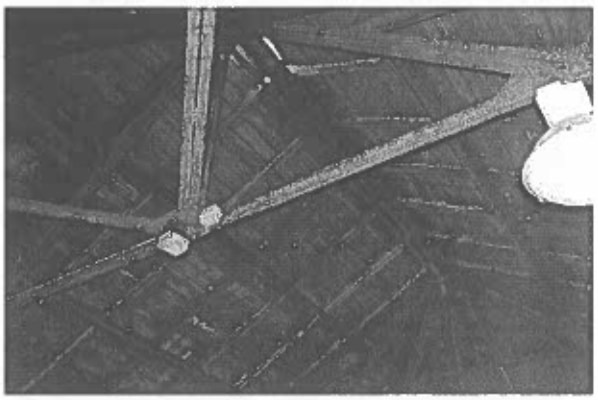
A-1. UNKEMPT SURROUNDINGS AND BOARDED UP WINDOWS, NORTH END OF BATHHOUSE.

A-2. MISSING CHUNKS OF STUCCO IN VAULTED CEILING EXPOSING RUSTED "C" CHANNELS.



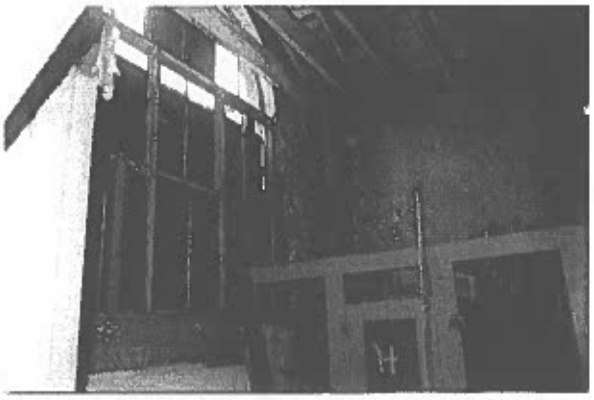
A-3. DILAPIDATED CONDITION OF LARGE GREEN CORNICE ORNAMENTATION BELOW THE MAIN ROOF.

A-4. BOARDED UP WINDOWS IN SOUTH SECTION OF BUILDING.

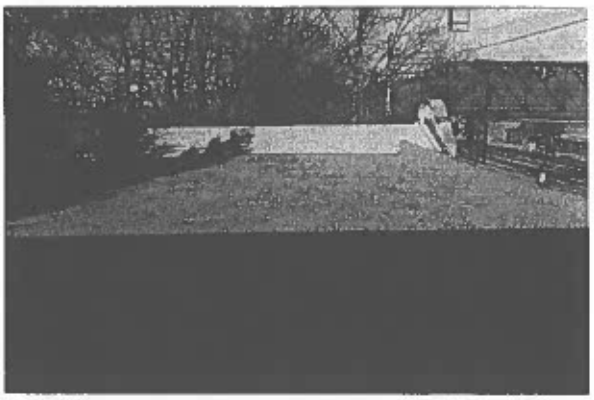


A-5. RUSTED STEEL TRUSS ROOFING SYSTEM IN PICNIC PAVILION.

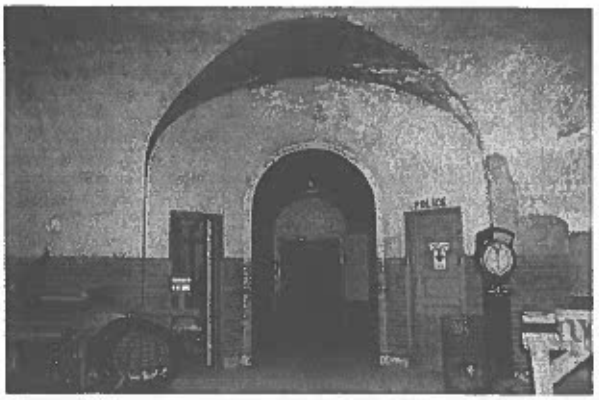
A-6. TAR AND GRAVEL ROOF ABOVE WOMEN'S DRESSING ROOM.



A-7. DILAPIDATED CONDITION OF WOMENS DRESSING ROOM.

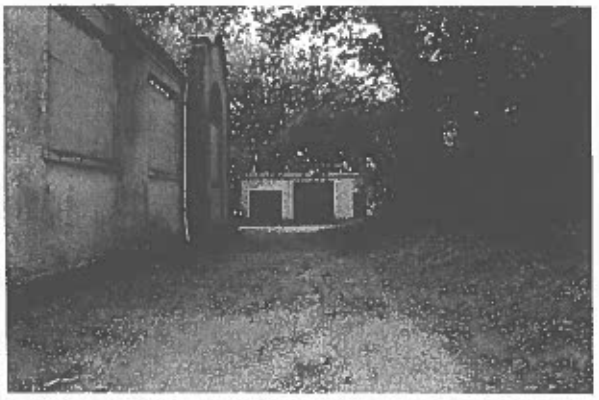


A-8. TAR AND GRAVEL ROOF ABOVE MENS DRESSING ROOM.



A-9. BOARDED UP MAIN ENTRYWAY WITH CEMENT PATCHWORK ON INTERIOR WALLS.

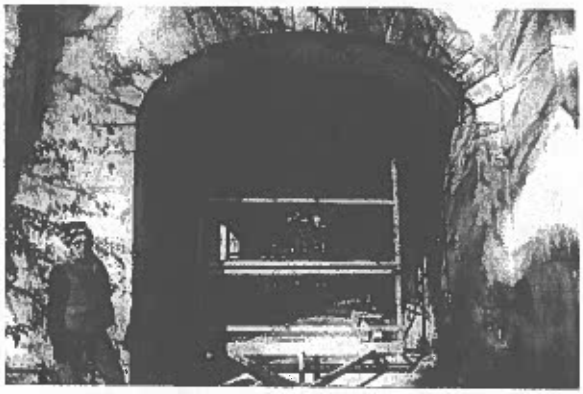
A-10. STAINED AND DILAPIDATED CEILING PANELS IN FORMER OFFICE SPACE.



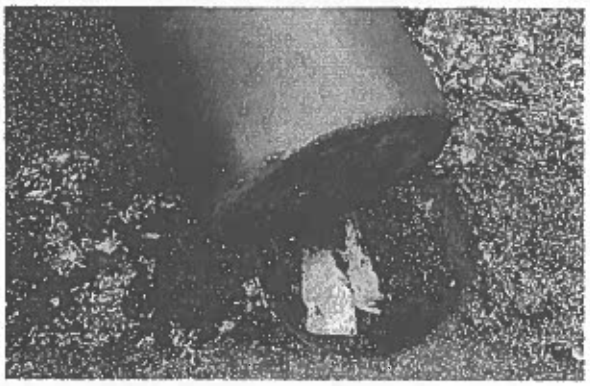
A-11. BOARDED UP WINDOWS AND BIOLOGICAL GROWTH ON EXTERIOR MASONRY WALLS.

A-12. BOARDED WINDOWS AND STRUCTURAL CRACKS ON EXTERIOR MASONRY WALL.

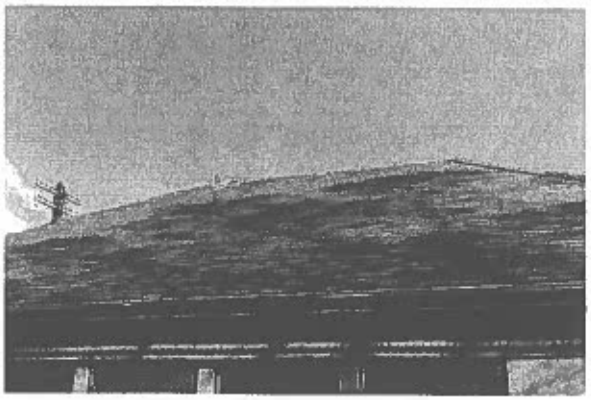
A-13. BIOLOGICAL GROWTH AND STRUCTURAL CRACKS ON EXTERIOR MASONRY WALLS.



A-14. CRACKS AT ENTRANCE TO VAULTED ARCHWAY.



A-15. HOLE IN TAR AND GRAVEL ROOF ABOVE WOMENS DRESSING ROOM.



A-16. FALLING SLATES ON ROOF OF CONDEMNED PICNIC PAVILION.

A-17. MENS DRESSING ROOM USED AS SAILBOAT STORAGE.

VI. Reuse Options

The Park Superintendent has mentioned several inquiries by community members for the use of the Bathhouse for special events such as weddings, parties, and other social and community functions. Restoring the Bathhouse to its original state and incorporating an adaptive re-use potential of serving as a multi-functioning building would serve as a substantial source of income for Westchester County. Consideration may also be given to expanding the upper level of the Bathhouse to include administrative and/or maintenance offices by adding new floors sensitively designed above the restored men's and women's dressing rooms.

2.6 Renovations and Maintenance Program for the Kingsland Point Lighthouse

I. Summary

The Tarrytown Lighthouse was in operation from 1882 until it was decommissioned in 1961. This 55ft. tall structure is listed on the National Register of Historic Places having applied in 1979. It consists of six levels that housed the living quarters of the Lighthouse Keeper, the fog bell equipment and light beacon. The different levels originally contained a kitchen, dining room, living room and lamp room. At a hundred and nineteen years old, the Lighthouse structure appears to be in good condition. Of the six levels, the cellar, first and fourth levels are in need of restoration work within the next two years.

The following general repair recommendations are necessary for the long-term maintenance of the Lighthouse:

- Joint caulk and paint (rust inhibiting) the exterior metal shell *(photo A-2).*
- Replace current Plexiglas portholes *(photo A-6).*
- Re- caulk cracks in existing caulking around porthole window frames *(photo A-7).*
- Re-caulk windowsills to prevent future water leakage.
- Clean surface of interior brick walls and replace occasional missing bricks that were sand blasted in order to remove lead paint *(photo A-4).*
- Replace or patch wood plank ceiling where decay was caused by humidity and water leakage on the fourth floor *(photo A-10).*
- Replace or patch minor fire damage of wood flooring on the fourth level *(photo A-9).*
- Refinish all wood floors.
- Remove rust marks on central column and repaint *(photo A-12).*
- Repaint all interior walls.
- Remove inoperable cellar furnace and cap all buried pipes and ducts.
- Remove hot and cold water pipe sleeves on floor levels 1 through 4 *(photo A-16).*
- Remove old toilet pipes *(photo A-14).* Due to ADA requirements for a public facility, it unlikely that a unisex bathroom facility can be provided at the Lighthouse. We recommend that visitors requesting this facility be advised to use the ones to be provided at the Bathhouse.

- Replace staircase down to cellar level *(photo A-3)*.
- The concrete retaining wall supporting the entry deck has cracks at its southeast corner due to differential earth movement and freeze/thaw. These cracks need to be checked and repaired *(See attached floor plans A-0, Photo A-5)*.
- Restore fog bell pulley mechanism to its original condition *(photo A-17)*.

Re-use Recommendation

We recommend that the Lighthouse be restored to its original state incorporating the original Lighthouse Keeper's residence. Serious effort by the Park's administration has begun this task. Re-use opportunities that have been considered given the Lighthouse's historic designation include a Lighthouse Lodge, a Lighthouse Museum and a Hudson River Ecosystem Studies Center. Restoration, rehabilitation and repair work requires a historic preservation consultant/architect from the needs analysis through completion, and all restoration, rehabilitation, repair or replacement must be conducted in accordance with the Secretary of Interior's Standards.

II. Building Overview

The Lighthouse is located in the town of Mount Pleasant, and Village of Sleepy Hollow, New York. The Tarrytown Lighthouse is a 55 foot tall steel conical tower with five levels, a cellar and a lantern deck set on a stone pier. The structure is painted white, the lantern room is black and the pier is red. The tower has eight windows, eight portholes and an octagonally glazed lantern room. The entrance to the Lighthouse is on the first level. A covered catwalk with a metal roof supported by simple cast-iron columns encircles the first level of the structure. The catwalk is accessed by an open ramp with handrails built around 1975. There are two walkways located at the top of the tower. One surrounds the fifth level and the other is directly above, around the lantern room. They are both bound by a decorative iron railing.

III. Procedures

The development of this renovation and maintenance program took the following two steps:

Documentation Review

A set of drawings from the Lighthouse's April 2, 1976 Initial Restoration Program by the Westchester County Department of Public Works (Engineering Division) were made available to us. Hidden materials that cannot be visually observed should be further investigated by an historic restoration specialist within the next two years *(See drawing A-0)*.

Site Visit

Site Visits were conducted on August 17th and October 10th, 2001. We spoke to Bryant Nixon, the Park superintendent about the condition and current usage of the

Lighthouse. The existing conditions surveyed consisted of an in-depth visual "walk-through" tour of all six levels, excluding the cellar of the Lighthouse. Exploratory probing or dismantling of the building's components was not performed.

IV. Existing Conditions And Renovation Recommendations

A. General Condition

The overall condition of the Lighthouse is good. However, we recommend that areas that exhibit deferred maintenance be renovated and restored within the next two years.

B. Exterior Metal Shell

Existing Condition
The Initial Restoration Program section drawings indicate that the Lighthouse structure has an exterior metal shell over brick bearing walls on the first through fourth levels. The overall general condition of the metal shell is good *(photo A-1 and A-2)*.

Renovation Recommendation
The exterior metal shell requires joint re-caulking and rust inhibiting paint within the next five years.

C. Cellar

Existing Condition
The Lighthouse Cellar appears to be in poor condition. The interior face of its foundation wall could not be viewed due to clutter and inadequate light. Its state of disrepair caused by excessive deferred maintenance has resulted in rotten and dilapidated wooden risers and treads thereby making access up and down its staircase unsafe. There are also no guardrails on this stairway (*Photo A-3*).

Renovation Recommendation
We recommend a thorough structural inspection of the foundation walls, investigation of all leakage issues using a borescope, replacement of the stairway, provision of proper lighting, and removal of the existing inoperable furnace and the option of its replacement with a heating system for year round use of the Lighthouse.

D. First Level

Existing Condition
The first floor is in fair condition. Some sections of the interior walls are chipped and defaced from the sandblasting necessary to remove the lead paint *(photo A-4)*.

Renovation Recommendation
Clean interior brick faces and mortar joints and replace missing bricks. The rust stains on the central column need to be removed and repainted.

E. Second Level

Existing Condition
The second floor is in good condition. The brick walls of the second floor are still intact, as there was no sand blasting done on this level.

Renovation Recommendation
The hot and cold water pipe sleeves in the wooden finished floor need to be removed and the floor holes plugged.

F. Third Level

Existing Condition
The third floor of the Lighthouse is in good condition.

Renovation Recommendation
This floor serves as an information area with interpretive exhibits for visitors to the lighthouse *(photo A-8)*. The Lighthouse is a historic landmark. It is important that the visual sources of historic information and interpretation are as compelling as the structure whose story they tell. Currently, all of the historic information is simply pinned to the walls. We recommend that the interior space of the third floor be spatially reconfigured using appropriately lit display panels, stands and graphics to accommodate its function as an exhibition space.

G. Fourth Level

Existing Condition
The fourth level of the Lighthouse is in fair condition.

Renovation Recommendation
Replace or patch the fire damage on the wooden floor *(photo A-9)*. Replace or patch the wood plank ceiling where decay has been caused by humidity and water leakage *(photoA-10, A-11)*. Clean up the rust damage on the central column and

repaint *(photo A-12)*. Replace plexy glass portholes with double-glazing. Make portholes operable for natural ventilation.

H. Fifth Level

Existing Condition
The fifth level of the Lighthouse is in good condition. There are no signs of water damage on the wooden floor. A new door and frame is the most recent addition to the Lighthouse. It opens into the first tier lookout on this floor.
Renovation Recommendation

Regularly clean bird-dropping stains on the metal guardrails of lookout landing *(photo A-15)*. Restore fog-bell pulley mechanism to its original condition.

I. Lamp Room

Existing Condition
The lamp room is in good condition.

Renovation Recommendation
Replace windows and window frames with double-glazed operable units *(photo A-13)*. It is recommended that an application be made to the United States Coast Guard - First District to reinstate the light beacon for historic purposes and not as a navigational aid, unless so desired.

J. Metal Decks and Rails

Existing Condition
The metal decks and rails appear to be in excellent condition.

K. Roofing

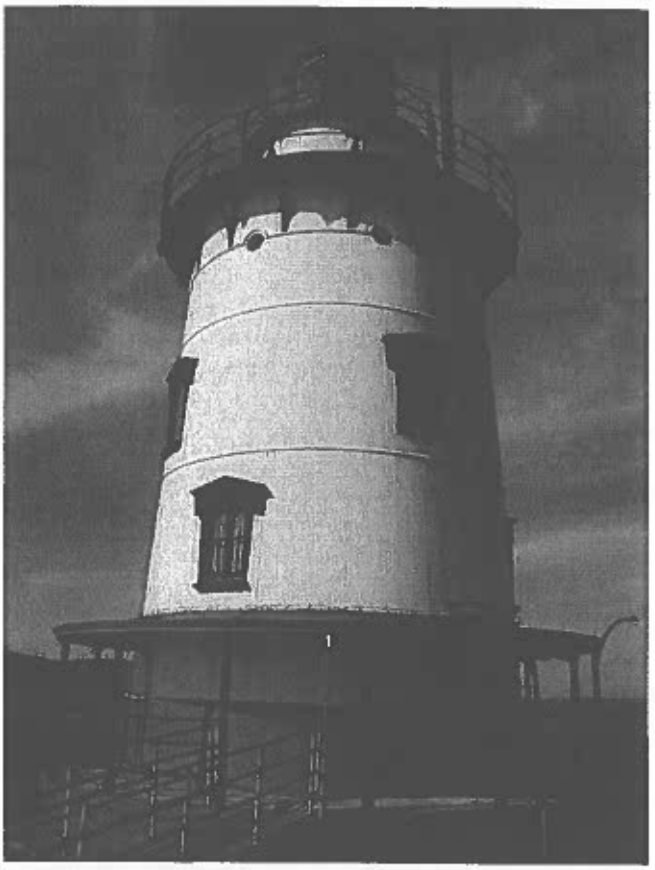
Existing Condition
The Lighthouse roof was inaccessible during our site visits, hence no appraisal was made.

Renovation Recommendation
It is recommended that all portions of the roof be investigated by a roofing specialist within the next two years.

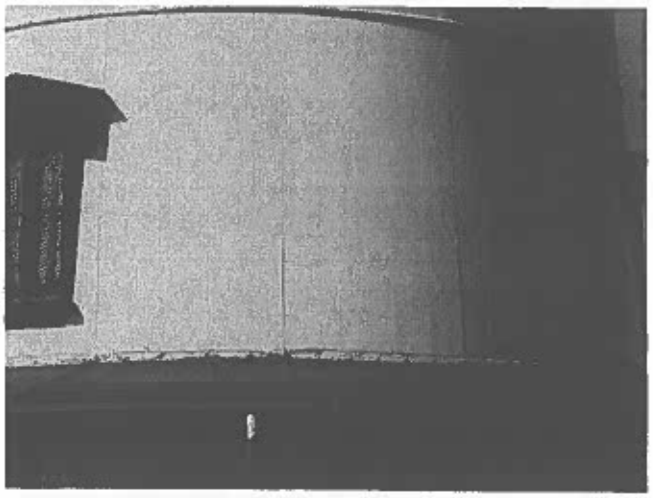
V. Maintenance Program

I. The development of this preventive maintenance program is based on maintaining the restored existing conditions achieved by previously described renovation recommendations. The program items and their frequency of application are listed below.

Component :	Item :	Frequency :
Exterior Metal Shell	Joint caulk	5 years
	Rust inhibiting paint	5 years
Interior Brick Walls	Clean surface	6 months
Central Column	Repaint	5 years
Metal Guard Rails	Repaint	5 years
	Clean bird dropping stains	As required
Roofing	See roofing consultant	-
Wood Burning Stove	Check and clean	6 months
Beacon Light	Check and replace light bulb, clean lenses	As required
Wooden Floor	Refinish	3 years
Interior Walls	Repaint	5 years
Metal Roof and Canopy	Repair all corroded areas	As required

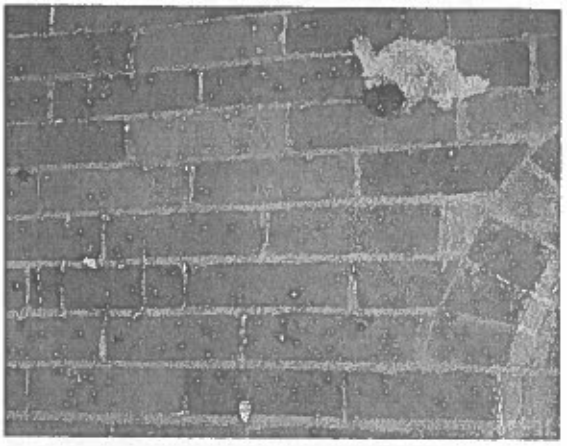


A-1. KINGSLAND POINT LIGHTHOUSE EXTERIOR METAL SHELL.

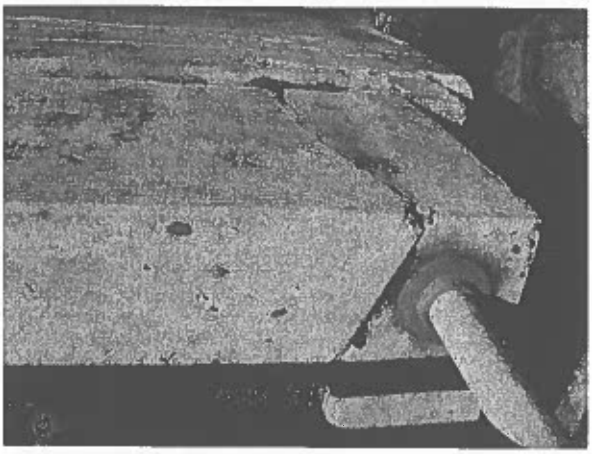


A-2. KINGSLAND POINT LIGHTHOUSE EXTERIOR METAL SHELL.

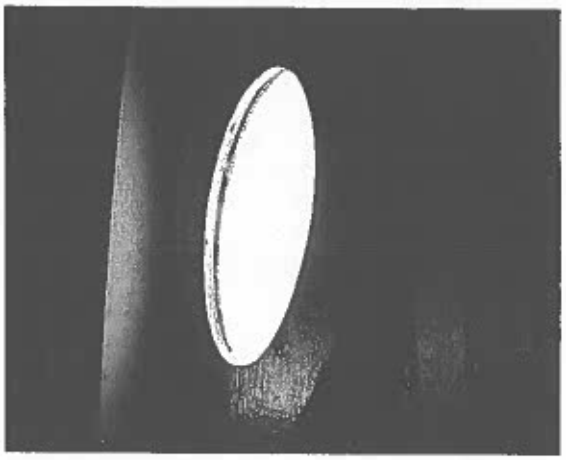
A-3. LIGHTHOUSE CELLAR LANDING SHOWING THE DILAPIDATED WOODEN STAIRCASE.



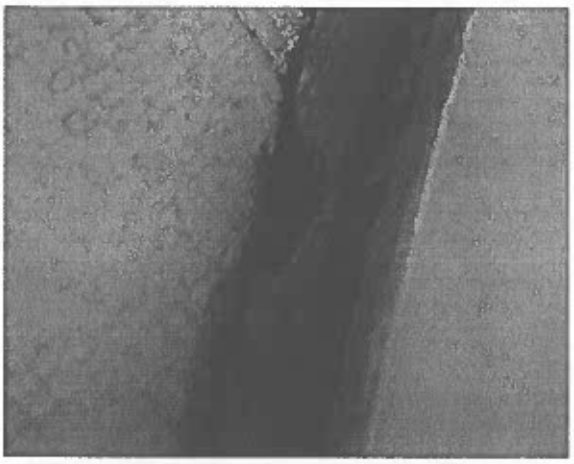
A-4. FIRST FLOOR INTERIOR WALLS.



A-5. CRACKS ON SE CORNER OF CONCRETE RETAINING WALLS SUPPORTING ENTRY DECK.

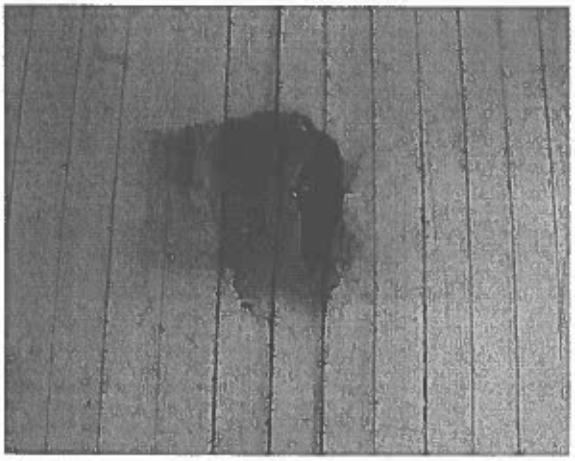


A-6. PLEXY GLASS PORTHOLE.

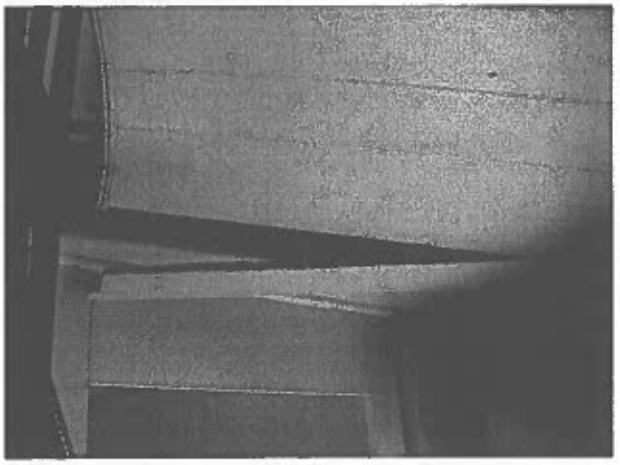


A-7. CRACKS IN CAULKING AROUND PORTHOLE WINDOW FRAME.

A-8. PHOTO OF ORIGINAL FIRST FLOOR KITCHEN, EXHIBITION ON THIRD LEVEL.

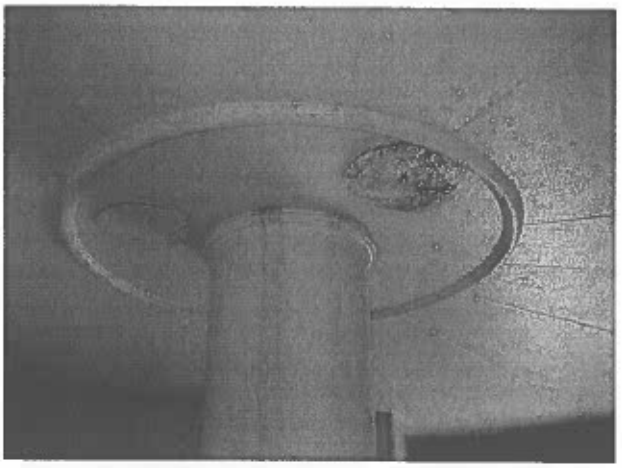


A-9. FIRE DAMAGE ON FOURTH FLOOR WOODEN FINISHED FLOOR.



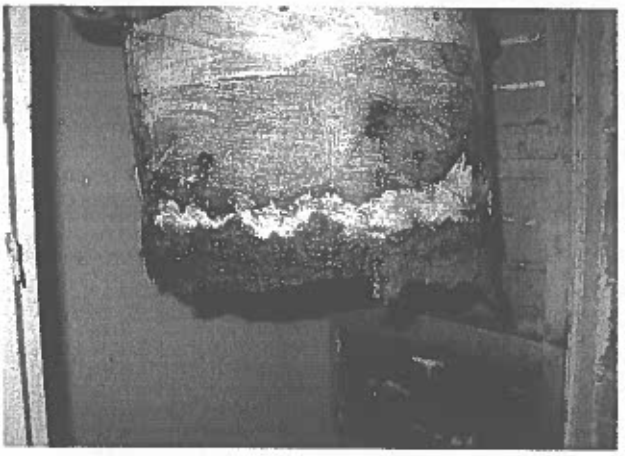
A-10. FALLING WOODEN PLANK CEILING PANELS.

A-11. HUMIDITY AND WATER DAMAGE IN CEILING PANELS.

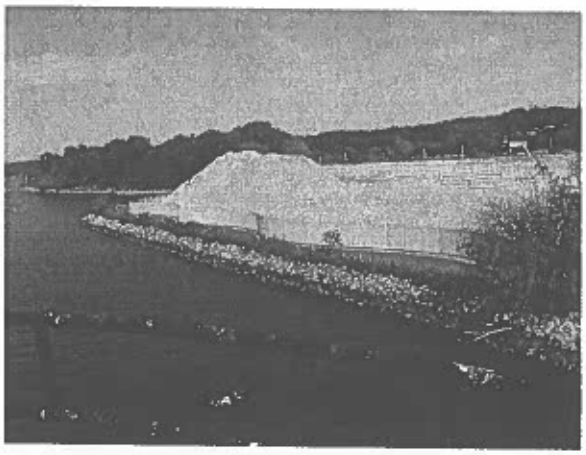


A-12. WATER AND HUMIDITY DAMAGE ON FOURTH FLOOR.

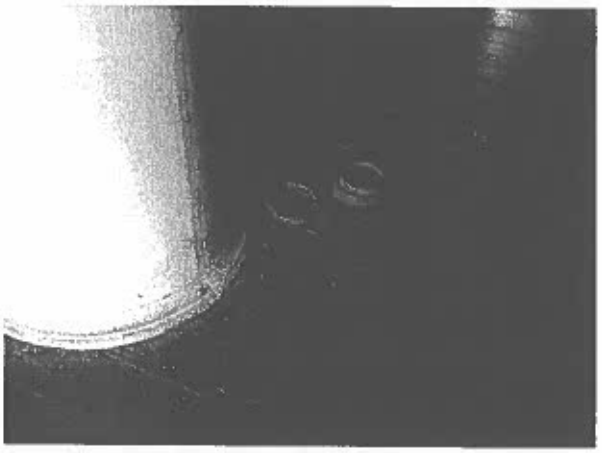
A-13. LAMP ROOM WINDOW AND WINDOW SILL.



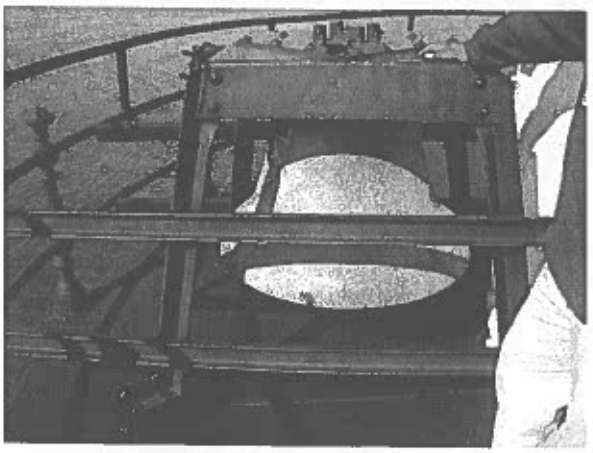
A-14. OLD TOILET VENT PIPE.



A-15. STAINS FROM BIRD DROPPINGS ON FIFTH LEVEL METAL GUARD RAIL.



A-16. HOT AND COLD WATER PIPE SLEEVES ON FLOOR LEVELS 1 THROUGH 4.



A-17. KINGSLAND POINT LIGHTHOUSE FOG BELL.

VI. Re-Use Options

The Lighthouse is listed on the National Register of Historic Places. Public tours of the Lighthouse are offered monthly and for school groups by special appointment. Bryant Nixon mentioned several inquiries by community members for its use for special events such as weddings, parties and other social and community functions. Given its national historic designation, and the rise in interest in tourism of historic sites, re-use opportunities that should include the following. Each of the three options will require a separate nearby men's and women's rest room facility.

A. **A Lighthouse Lodge** open to overnight visits by school age children and teachers; maximum occupancy 15 people; kitchen available for light meals.

Program:
First level: living, dining and kitchen areas;
Second level: sleeping area (maximum 5 people); sleeping bags will be required of all overnight guests; foldable cots stored in cellar;
Third level: sleeping area (maximum 5 people); sleeping bags will be required of all overnight guests; foldable cots stored in cellar;
Fourth level: sleeping area (maximum 5 people); sleeping bags will be required of all overnight guests; folded cots stored in cellar;
Fifth level: watch room and display area.

B. A fully restored **Lighthouse Museum of Hudson River Lighthouses** as well as their national development as navigational aids. Open to daily visitors; includes a maritime based gift shop.

Program:
Restore all floors of the Lighthouse to their original state. (See basic repair recommendations). This program would also involve the inclusion of logbooks, chronicles, photographs and furnishings that illustrate a historic interpretation of the life of a Lighthouse keeper more than 100 years ago.

C. A **Hudson River Ecosystem Studies Center** which would encompass a look at biogeochemistry, food webs (including microbial components) and water pollution in the Hudson River.

Program:
The proposed program would involve conducting environmental and advocacy programs to protect and create awareness of pollution in the Hudson River Basin through a monitoring program of air, noise and water quality.
First level: ecology book and educational materials store.

Second and Third level: exhibition space: depictions of a microbial study space using gene probes, election microscopy, and interpretations of satellite images of the river basin;
Fourth level: Exhibition Space 2- Depictions of biogeochemical processes affecting water quality and their effect on the structure and function of the Hudson's ecosystem.
Fifth level: Photo gallery, pollution monitoring charts and data files.

Implementation of Re-Use Options

There are a variety of non-profit organizations within the Hudson River Basin who are most interested in fund-raising and operating one or more of these re-use options. They include Scenic Hudson, The River-Keeper, and Pete Seeger's Clearwater Institute.

2.7 General Park Improvements

The improvements throughout Park, according to Master Plan illustrated in a single drawing, fall into four major categories: I. Access, II. Conservation, III. Rehabilitation, and IV. New Amenities. Improvements are as follows:

I. Access:
- Install necessary signage in appropriate locations;
- Install new walkways throughout Park;
- Install steps to provide additional access to beach;
- Provide cobble surface at entry drive bridges and drop off for traffic calming purposes.

II. Conservation:
- Provide maintenance team/staff:
- Natural resource management for the shoreline treatment;
- Install erosion control plantings at shoreline.

III. Rehabilitation:
- Minor restoration to existing Comfort Station at picnic areas;
- Provide proper erosion control plantings at shoreline;
- Perform structural inspection and rehabilitate Bathhouse;
- Perform structural inspection and rehabilitate Lighthouse;
- Mothball existing pedestrian overpass for future use;
- Repave Entry Drive as necessary and all paved areas in disrepair.

IV. New Facilities:
- Install new esplanade railings at necessary areas;
- Install decorative paving at lookout area;
- Install esplanade and path lighting throughout;

- Install new trees and shrubs at Bathhouse to screen maintenance;
- Install new trees and shrubs at Bathhouse and drop off;
- Provide new Playground at picnic area to replace existing;
- Construct naturalistic seating areas with ornamental boulders
- Install new trees and benches at esplanade;
- Construct new access road from lower parking lot to Bathhouse and drop-off;
- Construct new picnic pavilion at approximate location of existing northern pavilion;
- Construct new pavilion at southern picnic area;
- Construct new baseball backstop;
- Install lawn-pavers at overflow parking area;
- Construct ADA compliant path to provide access to comfort station, and pavilion in lower picnic area;
- Provide screen/plantings at 40-foot buffer zone between General Motors property and Park.

III. Kingsland Point Development Costs

Order-of-magnitude development cost estimates are presented for the following three components as shown on the single Master Plan drawing:

3.1 General Park Site

Infrastructure

Vehicular Traffic Calming Cobbled Surface	$210,000
Bollards	$35,000
Subtotal	**$245,000**

Pedestrian Traffic

Restore Existing Pavement to Cobblestone	$115,000
Asphalt Paved Pedestrian Path	$46,000
Path Lighting	$60,000
Lighting Along Esplanade	$126,000
Waterfront Esplanade	$510,000
Esplanade Railing	$170,000
"Moth Ball" Exist. Pedestrian Overpass for Future Re-use	$10,000
Subtotal	**$1,037,000**

Shoreline	
Replace Vegetation w/ Non-invasive, Erosion Control Species (Shoreline)	$250,000
Replace Vegetation w/ Non-invasive, Erosion Control Species (Overlook)	$15,000
Restore and Extend Beach	$240,000
Rehabilitate Rip-rap at Jetty	$250,000
Breakwater	$220,000
Fishing/Observation Pier	$140,000
Clear Brush at Existing Steps to Beach	$1000
Tit Natural Seating with Ornamental Boulders	$10,000
New Steps to Beach	$8,000
Deciduous Trees	$68,000
Evergreen Trees	$33,000
Subtotal	**$970,000**
Extended Buffer	
Deciduous Trees	$55,000
Evergreen Trees	$17,000
Lawn	$250,000
Subtotal	**$322,000**
Other	
Pavilions	$200,000
Comfort Station	$90,000
Ticket Booth Signage (Points of Interest, Direction)	$5,000
Perennial Garden	$50,000
Rehabilitate Playing Fields	$45,000
Maintenance Area/Lot	$12,000
Re-grade and Restore Lawn to Expose Archeological Artifacts	$95,000
Benches	$20,000
Subtotal	**$517,000**
Park Site Subtotal	**$3,091,000**

3.2 Bathhouse Rehabilitation

Main Level (Exterior)	
Roof inspection and restoration (tar and gravel roof)	$25,000
Exterior wall and eclectic ornamentation and restoration (Rehabilitating exterior cracks inspection and Removal of biological growth from exterior masonry walls)	$50,000
Window and window frame removal and replacement	$100,000

Small office building demolition	$5,000
Subtotal	**$180,000**
Main Level (Interior)	
Rehabilitating interior wall cracks	$30,000
Repainting walls	$2,000
Refinishing floors	$10,000
Ceiling repair/replacement	$5,000
Restoring boarded up east entryway	
Rebuild men's & women's dressing rooms and toilets	$100,000
Subtotal	**$147,000**
Upper Level	
Roof inspection and restoration (slate roof)	$25,000
Exterior wall and eclectic ornamentation inspection and restoration (Rehabilitating exterior wall cracks and Removal of biological growth from exterior masonry walls)	$50,000
Subtotal	**$75,000**
Bathhouse Rehabilitation Subtotal	**$402,000**

3.3 **Lighthouse Rehabilitation**

Subtotal	**$100,000**

Lighthouse Re-use Options Renovation Costs:

A.	Lighthouse Lodge	
	Basic Renovation	$100,000
	Installation of Restrooms	$150,000
	Dining, Living and Kitchen area	$50,000
	Sleeping Levels	$50,000
	Total	**$350,000**
B.	Lighthouse Museum:	
	Basic Renovation	$100,000
	Installation of Restrooms	$150,000
	Maritime Gift Shop	$100,000
	Keeper's Living Quarters	$50,000
	Total	**$400,000**

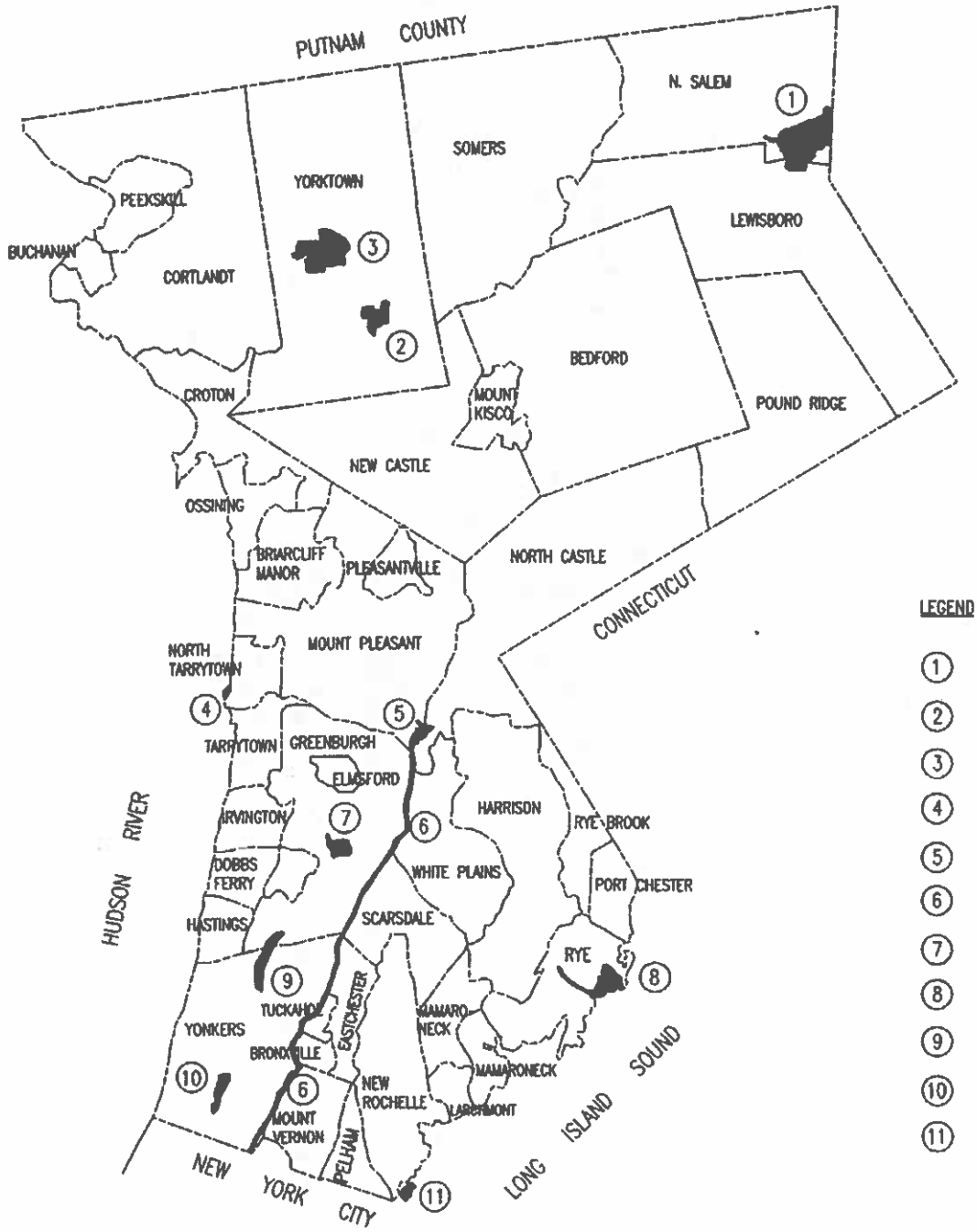
C.	Hudson River Ecosystem Studies Center:	
	Basic Renovation	$100,000
	Installation of Restrooms	$150,000
	Ecology Store	$100,000
	Exhibition Spaces	$150,000
	Monitoring Charts and Data Files	$50,000
	Total	**$550,000**
	Subtotal (including Park Site Work, Bathhouse, Lighthouse Rehab Base Cost and Lighthouse Option C)	**$4,143,000**
	Contingency @ 20%	**$828,000**
	Total	**$4,971,000**
	SAY	**$5,000,000**

PARKS
WESTCHESTER COUNTY

SPRAIN RIDGE PARK

SPRAIN RIDGE PARK

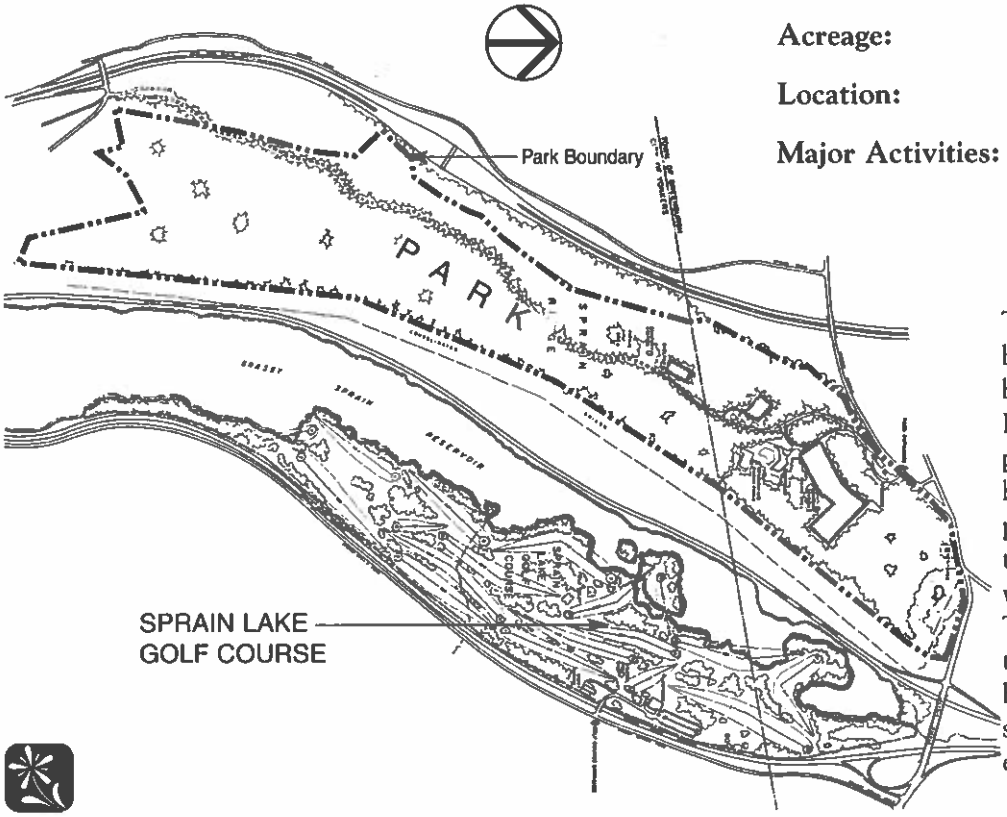
PARKS
WESTCHESTER COUNTY



LOCATION PLAN
NOT TO SCALE

SPRAIN RIDGE PARK

PARKS
WESTCHESTER COUNTY



Map

Date Acquired: *1925 and 1973*

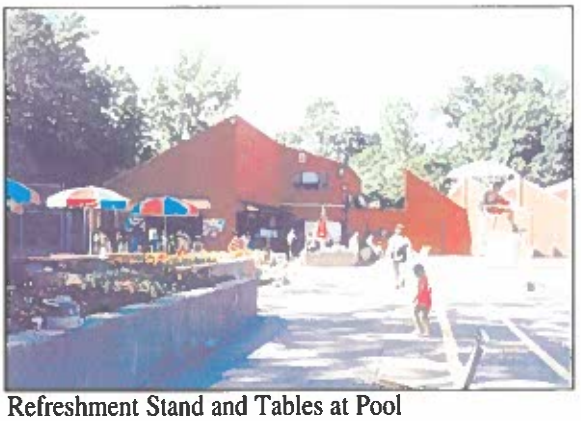
Acreage: *278 Acres*

Location: *Greenburgh/Yonkers*

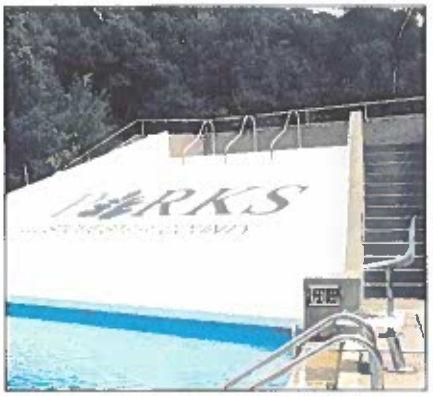
Major Activities:
- *swimming/pool*
- *picnicking with playground*
- *hiking/walking*
- *refreshments*

The park lies along a ridge between the north and south bound roadways of the Sprain Brook Parkway. The developed portion contains a pool, bath house and parking area and two picnic areas. The remainder of the property is heavily wooded with paths and trails throughout. The site was previously owned by the Boyce Thompson Institute, a botanical research center and, as such, contains many unusual and exotic "woodland" plants.

Water Park/Sprayground Area at Pool



Refreshment Stand and Tables at Pool



Entrance to Pool

Stone Overpass in Sprain Ridge Woods and Trails

Group Picnic Area Located in Woods

SPRAIN RIDGE PARK

I. Introduction

1.1 Location

Sprains Ridge Park is a large land preserve and pool complex in the Town of Greenburgh and the City of Yonkers with an entrance on Jackson Avenue. Nestled between the Sprain River Parkway and New York State Thruway, its location makes it an easily accessible park in the south region of the County.

1.2 Description and History

The Park offers a variety of landscape experiences ranging from heavily wooded areas with large rock outcroppings to developed pool and picnic areas. Two Westchester County-owned residences are located on Jackson Avenue; one at the entrance of the park, and another a few hundred yards east. The main features of the park are the pool/bathhouse complex, the picnic areas and the five miles of trails for hiking, mountain biking and strolling. The pool complex, set in the woods in a stepped fashion takes full advantage of sloped areas and rocky outcroppings. The bathhouse is served by a parking lot. A total of three parking lots exist in the park, two are located at upper northern portion of park and one large lot with a capacity of approximately 400 cars is located in the lower southern portion of park. Besides the bath house complex, there are two freestanding comfort stations further within the Park located adjacent to the picnic areas.

The existing pool complex at Sprain Ridge Park includes the following features: separate recreational and diving pool's, children's aquatic playground and extensive multi-level concrete deck space for sunning and sitting. It also features a large bathhouse with men's and women's locker rooms and a snack bar area with a separate eating area featuring picnic tables and umbrellas. The complex is set into the hillside and bordered by the surrounding woods and rocky outcroppings. On summer weekdays, both the general public and day camps currently use this complex. A north-south partially paved and gravel road leads through an arboretum quality forest acquired from the Boyce Thompson Institute in 1965 for the study of botany and as a result, the area contains many unusual and exotic woodland plants. At present, facilities are limited to a reserved-use and family-picnic area with tables and grills.

The existing bathhouse, done in a bold 1960's modern design, is a one-story building with a sawtooth roof repeated over the changing rooms. Screen walls extend out in front of the multiple changing room entrances. A two story rectangular building attached to the bathhouse contains a concession stand with an office above. The entire building is finished in wood siding with a redwood stain. The interior walls and ceilings of the bathhouse are also finished in wood painted the same color. Recently renovated (1995) clerestory windows bring light in throughout the building.

II. Recommendations

The Park and pool has been functioning successfully for many years. After researching the current use of the Park, recommendations that would continue to preserve and enhance the Park have been developed. The following categories of improvements are addressed:

- Entrance enhancements
- Access control
- Pedestrian and vehicular circulation
- Trail linkages
- Pool complex
- General improvements

2.1. Entrance Enhancements

The entrance is currently a signed driveway that lends itself to the rustic character and simplicity of the Park. However, immediately upon entering the Park the user is faced with a park residence. In order to maintain this simplicity the entrance requires screening from the Park driveway to the caretaker's residence by use of native shade trees and indigenous eye-level shrubs. In order to create more of a sense of arrival, stone rustic character piers should be constructed and informal naturalistic plantings should be installed. One of the major problems of the Park is the illegal access from various areas. It is therefore recommended that a locking wood gate barrier be installed at the entrance. This gate would be locked at dusk to eliminate and control access of vehicles to the Park and parking lot after Park hours.

2.2 Access Control

Sprain Ridge Park recently expanded its existing trails to cover about five miles of winding trails over approximately 278 acres of varied terrain. Taking full advantage of the preserve and enabling users to hike, bike and walk the entire area ultimately brings more individual users to the Park including unauthorized users and off-road motorized vehicles. This has become one the largest problems within the Park to date. As a result of the illegal access, these vehicles are destroying numerous trails throughout the Park.

Unwanted activities such as hunting are another security concern. Since fully securing the Park perimeter is impractical, these access areas must be fully identified and controlled by use of "Jersey-style" concrete barriers, chain link fences, large boulders or the Park-locking wood gate barrier. Although the master plan identifies a number of these areas, the county must perform a detailed study to control access at all problem areas. In order for this task to be properly completed, the master plan recommends a full security inspection of the property in coordination with the neighboring facilities of Con Edison, NYS Thruway, Ridge Hill Center, NY Department of Transportation and local authorities.

2.3 Pedestrian and Vehicular Circulation

The circulation throughout the Park is generally quite straightforward. In order to create a safer experience for pedestrians and vehicles, the master plan recommends the following:

- Provide a two-way traffic flow on the main entry road from Jackson Avenue to the upper picnic area and upper parking lot to help eliminate back up at the bathhouse and pool complex.
- Switch the drop-off lane with the access lane to the parking lot at the bathhouse. This switch creates a safer situation separating pedestrian flow at the drop-off from vehicular traffic to the parking lot.
- Create organized, easy-to-read signage in all areas to make Park information clear and concise for Park users both on foot and in cars.
- Install a sidewalk at areas within the Park and parking lot where pedestrian and vehicular uses are mixed. Provide roadside treatments consisting of low plantings, which separate pedestrians from vehicles along the Park roadway.
- Install new paths and re-surface existing paths to create internal connections from all desired Park facilities. Create path connections from the upper picnic area to the lower picnic area and from the parking lot to the pool/food concession areas.
- Create vandal-proof trailside directional and trail classification signage on the existing trails.
- Pave the existing service roadway from the upper picnic area to its southern terminus for emergency and maintenance vehicle access to the trails.

2.4 Trail Linkages

Westchester County offers a wide variety of trail experiences. The North and South County Trails run along the former Putnam Division railway's right-of-way throughout the County making them a few of the longest most desirable linkages. The most attainable and uncomplicated pedestrian link from the Sprain Ridge Park to the South County Trail exists via Jackson Avenue to Saw Mill River Road to Farragut Avenue. Coordination with NYDOT would be necessary to establish proper signage and identify roads as 'Bikeway/Roadway' and 'Connection to South County Trail System'.

2.5 Pool Complex

Currently, the vehicular approach to the pool complex is confusing and does not provide safe areas for pedestrian circulation and drop-off. The Master Plan recommends the relocation of a few parking spaces to allow for a larger pedestrian plaza area to function as a drop-off area for visitors. Decorative paving and banding in the roadway pavement help define this area and serve as a traffic calming device through this space. An overhead wood trellis structure, signage, planting and benches also serve to create a more welcoming entrance and provide a place for

2.6 General Improvements

The improvements throughout the Park recommended in the Master Plan fall into four major categories and are illustrated on three Master Plan drawings:
I. Access, II. Conservation, III. Rehabilitation, and IV. New Amenities. Specific improvements are as follows:

I. Access:

- Provide a sidewalk to improve pedestrian access from the main parking lot to pools;
- Install new walkways and repair existing walkways to and from the upper picnic areas to the pools/food concession area;
- Provide barriers to decrease illegal access into the Park from surrounding areas by installing chain link fences, large boulders, wood gate barriers, and/or 'jersey barriers';
- Replace gravel material with paved asphalt on select trails to make them ADA accessible.

II. Conservation:

- Provide a maintenance team to conserve and preserve the trails and surrounding areas;
- Develop a Natural Resource Management Program staff with volunteers from local and surrounding conservation and environmental groups.

III. Rehabilitation:

- Restore roofs and rehabilitate the existing comfort stations located in the upper and lower picnic areas;
- Provide proper erosion control plantings at all necessary areas throughout the Park and its trails;
- Re-grade all trails damaged by motorized vehicles;
- Perform a structural inspection of the existing stone bridge;
- Repave the entry drive and all paved areas in disrepair;
- Repave the main parking lot.

IV. New Facilities:

- Construct new stone piers at the entrance to the Park;
- Install new trees and shrubs at the entrance to screen the care-taker residence;
- Construct the new aquatic playground at the pool complex to replace the existing wading pool presently under design;
- Install new trees and benches in the pool area;
- Install new play structures at the upper picnic area to match the size and quality of the existing play structures at the lower picnic area;
- Provide and install new grills at the upper and lower picnic areas;
- Install concrete pads for all picnic tables at the upper and lower picnic areas;
- Provide a new picnic pavilion at the location of the old pavilion in the upper picnic area;

- Construct a new picnic pavilion at the lower picnic area;
- Construct an ADA compliant path to provide access to the comfort station and picnic pavilion in the lower picnic area;
- Install improved signage throughout the trails in the Park.

III. Sprain Ridge Development Costs

The following order-of-magnitude development cost estimates are broken down by location:

- **Pool and Picnic Area**

Bathhouse and Concession Area Improvements	$50,000
ADA Pool Accessibility	$10,000
Lawn Enhancements	$100,000
Subtotal	**$160,000**

- **Roadway and Parking**

Main Entrance and Entry Road Improvements (Stone Piers, Plantings, etc.)	$950,000
Parking Lot (Repave, Crosswalks)	$200,000
Pool Area Entrance Improvements (Overhead Structure, Plantings, etc.)	$75,000
Subtotal	**$1,225,000**

- **Picnic and Trail Areas**

Picnic Area Improvements (Grills, Drinking Fountains, etc.)	$30,000
Play Equipment, Picnic Pavilion, and Restoration of Comfort Station	$130,000
Trail Rehabilitation	$950,000
Signage	$10,000
Subtotal	**$1,120,000**

- **Access Control**

Restrict or Eliminate Trail Access in Selected Areas	$150,000
Locking Wood Gates at Selected Locations	$10,000
Subtotal	**$160,000**

- **Other**

Inspect Stone Arch Bridge	$15,000
Repair Stone Arch Bridge	$80,000
Rehabilitate Service Road with Slope Stabilization	$275,000
Subtotal	**$370,000**

Subtotal	**$3,035,000**
Contingency @15%	**$455,000**
Total	**$3,490,000**
SAY	**$3,500,000**

Westchester County Department of Parks, Recreation and Conservation

Master Plan Phase II Report

Part 2

Westchester gov.com

PARKS
WESTCHESTER COUNTY

May 30, 2003

Prepared by:

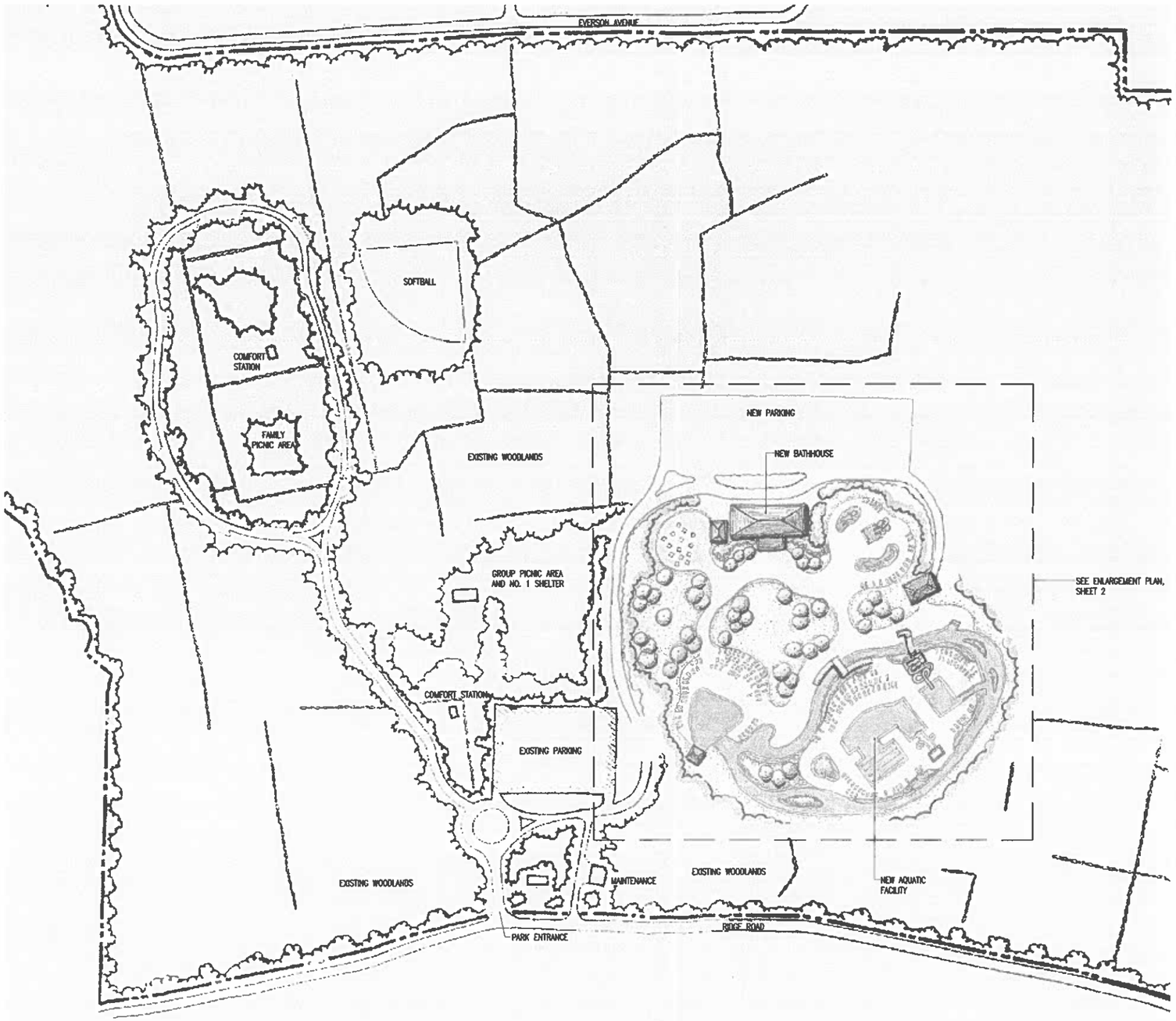
VOLLMER ASSOCIATES LLP
ARCHITECTS • LANDSCAPE ARCHITECTS • PLANNERS • SURVEYORS

PARKS
WESTCHESTER COUNTY

SWIMMING STUDY

RIDGE ROAD PARK

PARKS
WESTCHESTER COUNTY



RIDGE ROAD PARK
MASTER PLAN PHASE II

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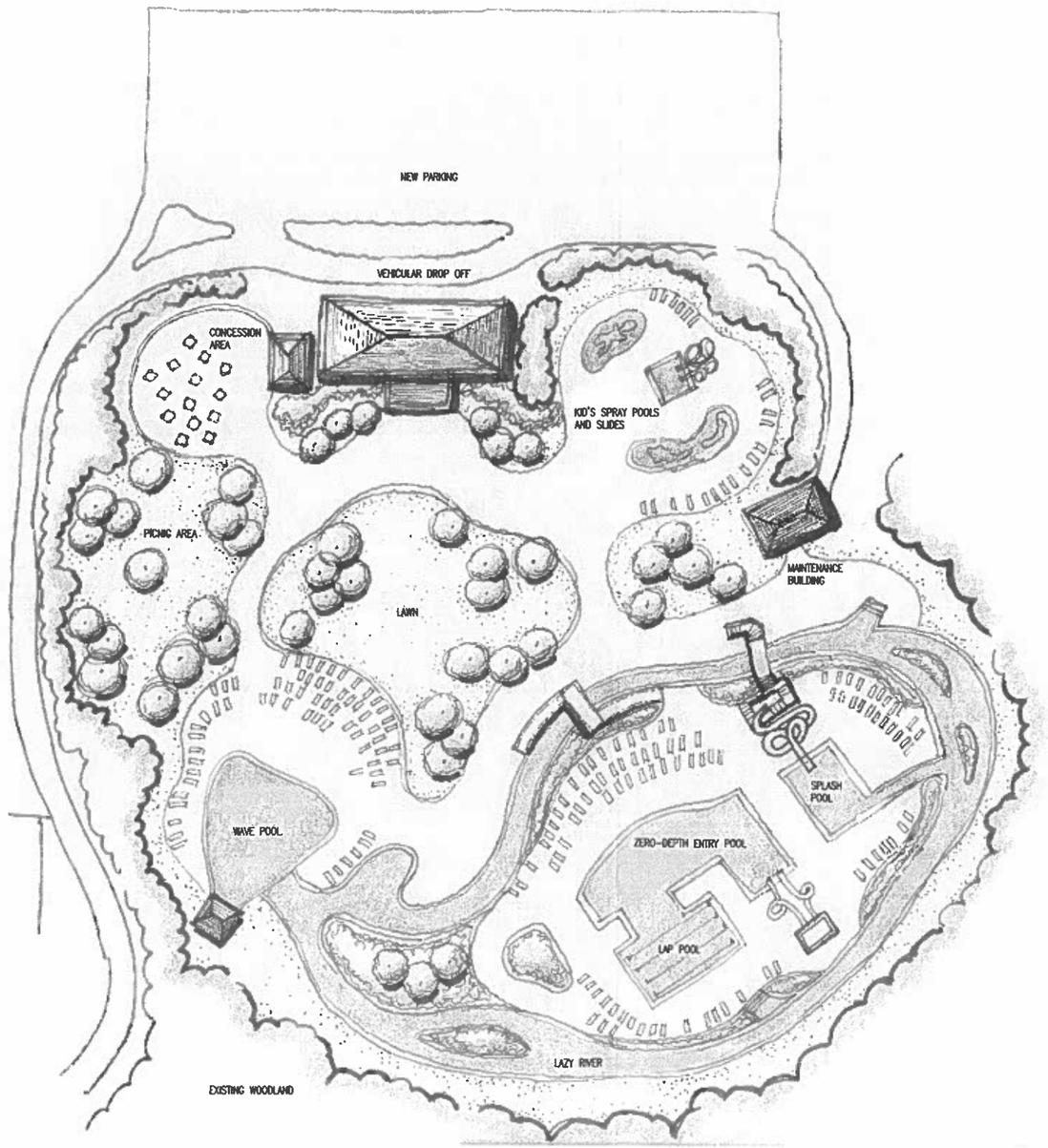
MAY 30, 2003



RIDGE ROAD PARK
MASTER PLAN PHASE II

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GLEN ISLAND PARK

PARKS
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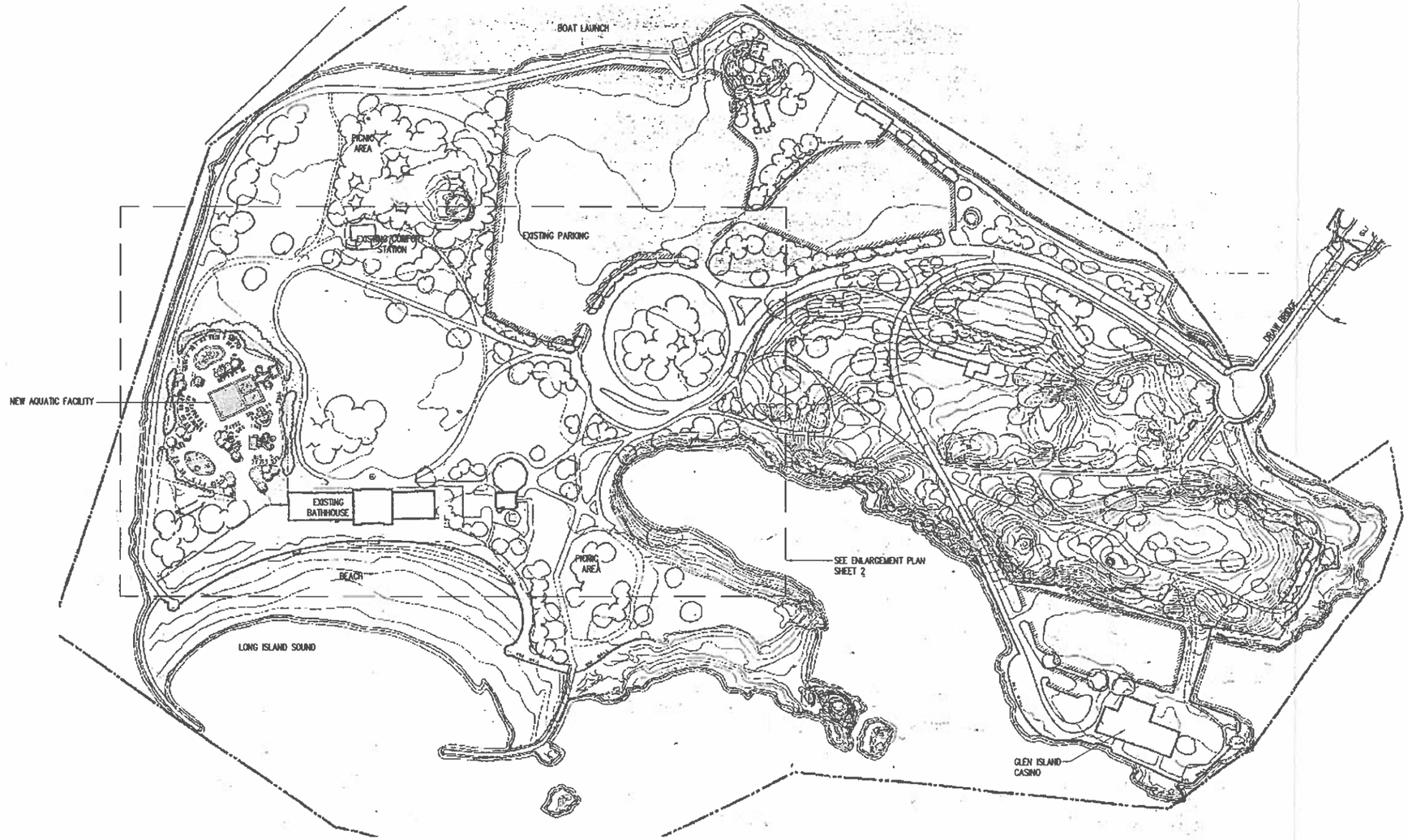

GLEN ISLAND PARK
MASTER PLAN PHASE II

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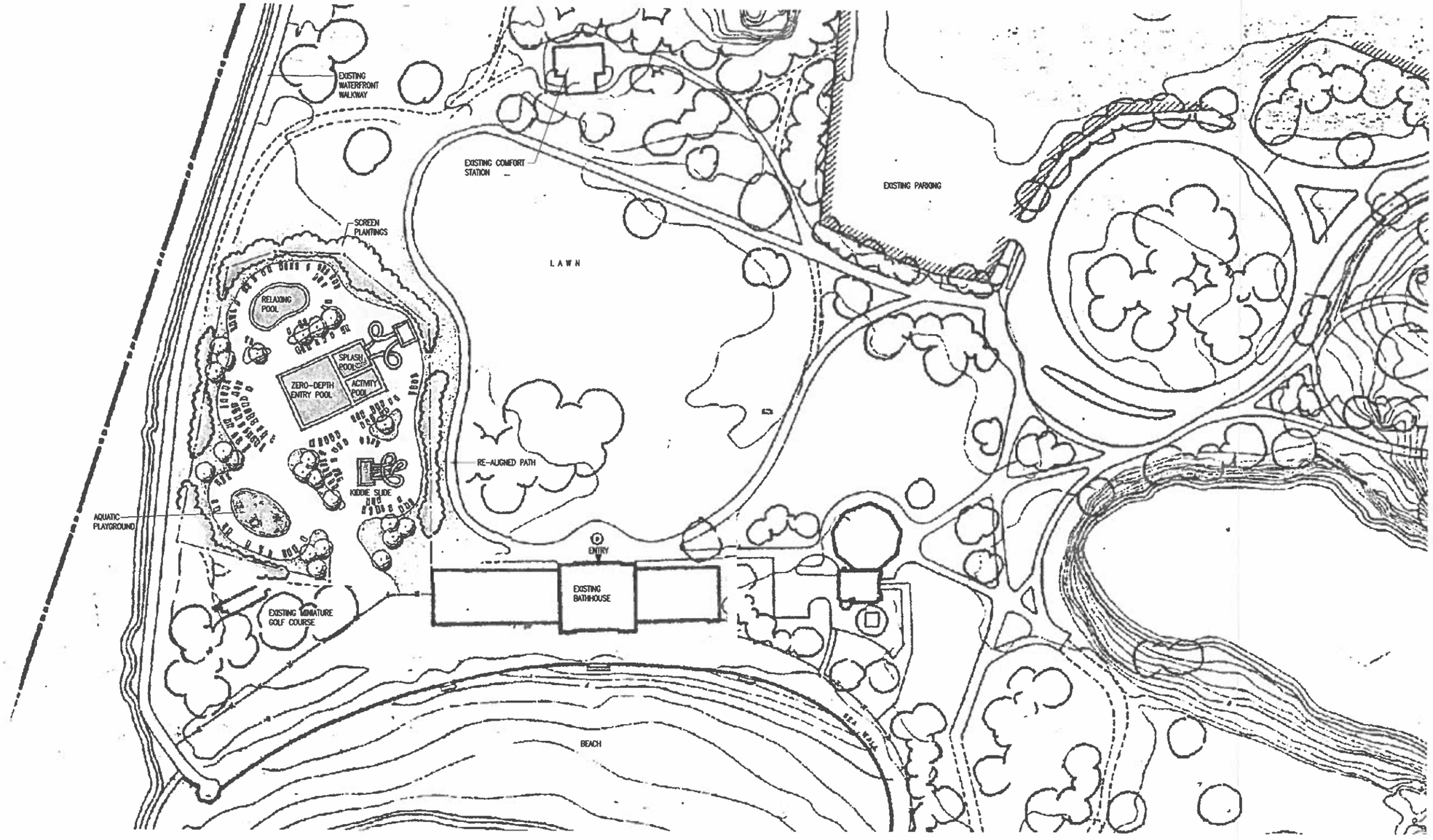
WESTCHESTER COUNTY PARKS, RECREATION AND CONSERVATION

MAY 30, 2003

SHEET 1 OF 2

PARKS
WESTCHESTER COUNTY



GLEN ISLAND PARK
MASTER PLAN PHASE II

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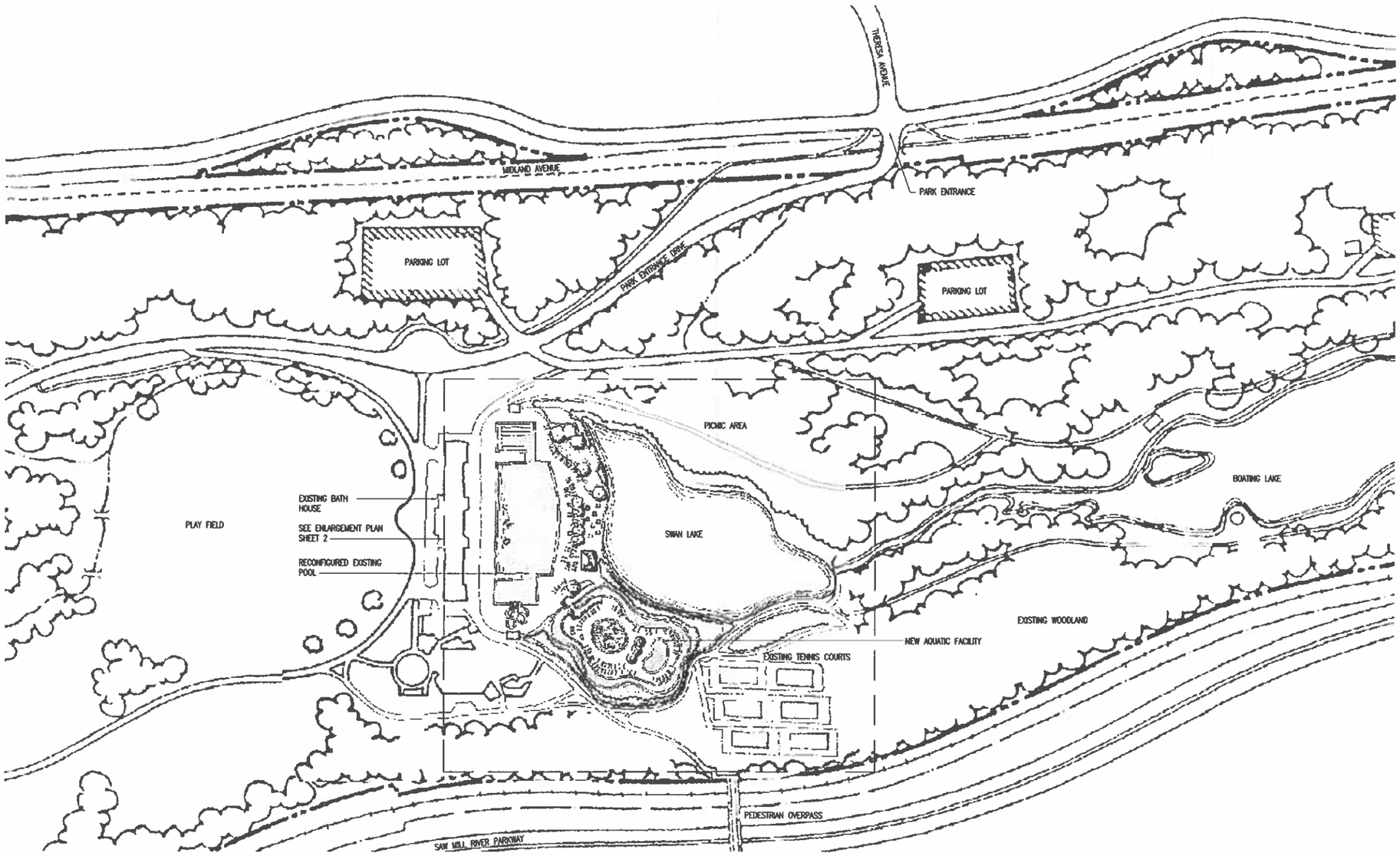

TIBBETTS BROOK PARK
MASTER PLAN PHASE II

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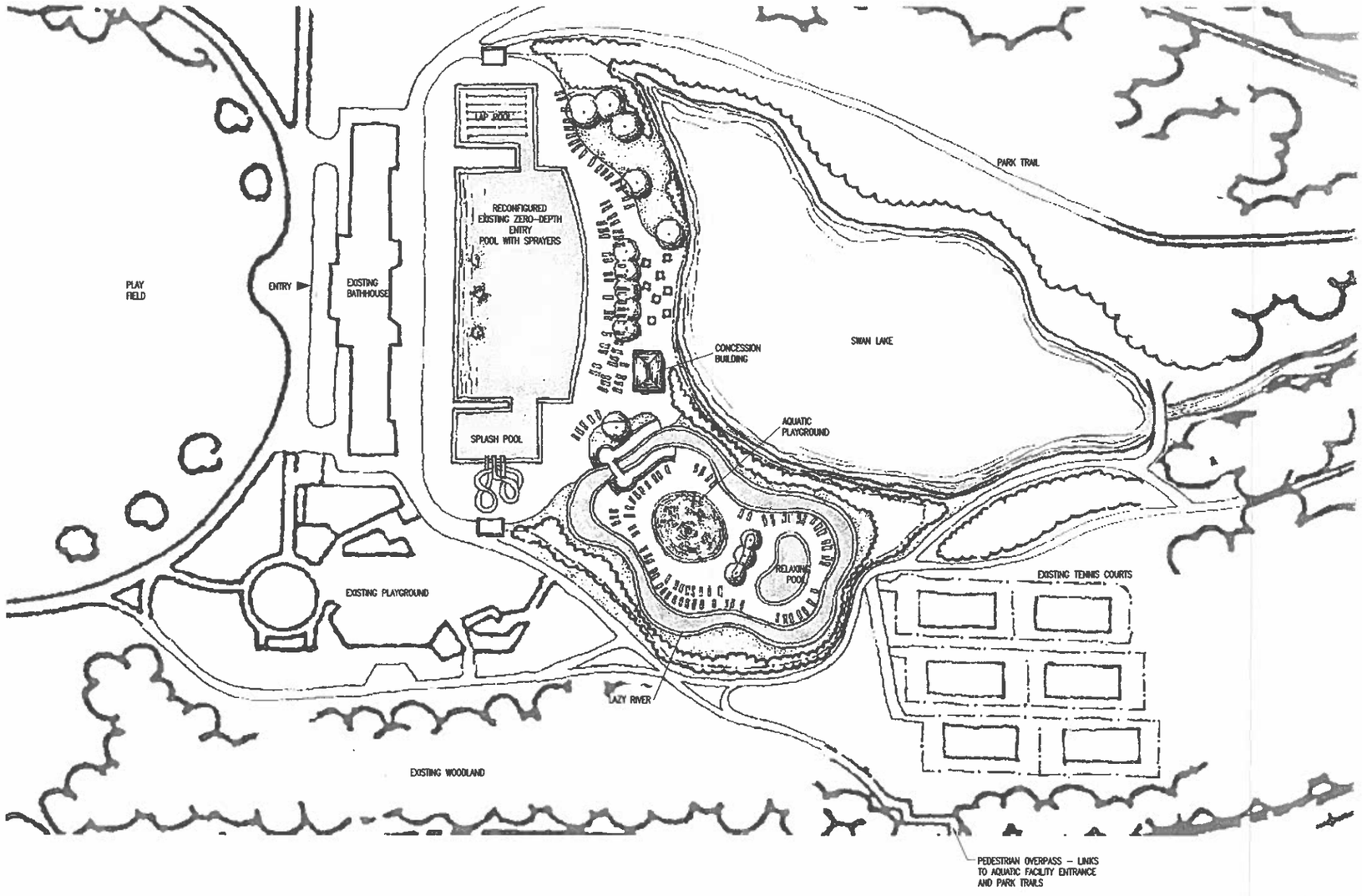

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GOLF STUDY

LOCH LEDGE GOLF COURSE: Recommended 9-Hole Golf Course Routing Plan

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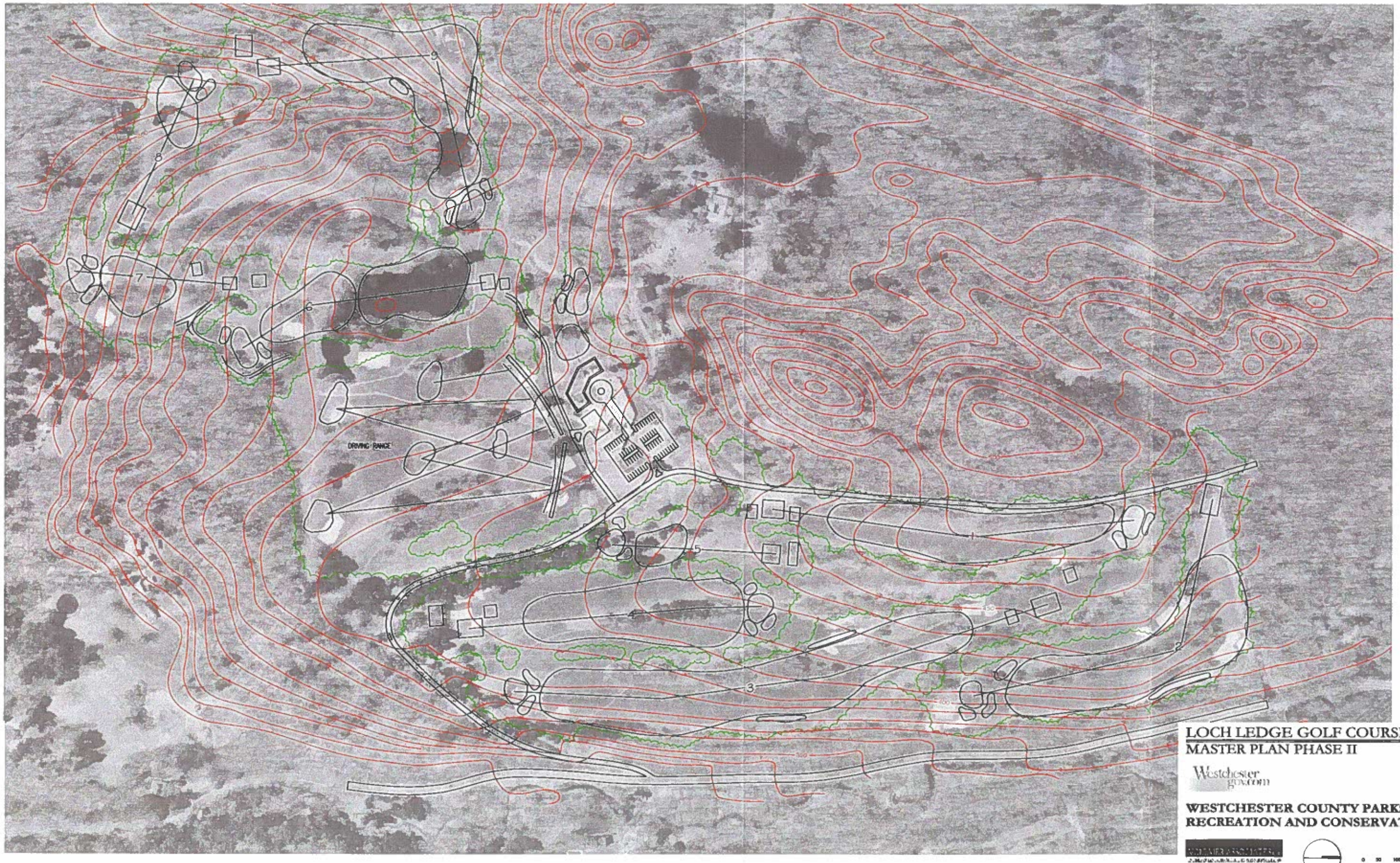

LOCH LEDGE GOLF COURSE
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LOCH LEDGE GOLF COURSE: Recommended Improvements

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LOCH LEDGE GOLF COURSE
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SHEET 2 OF 2

MOHANSIC GOLF COURSE: Existing Conditions and Recommended Routing Plan

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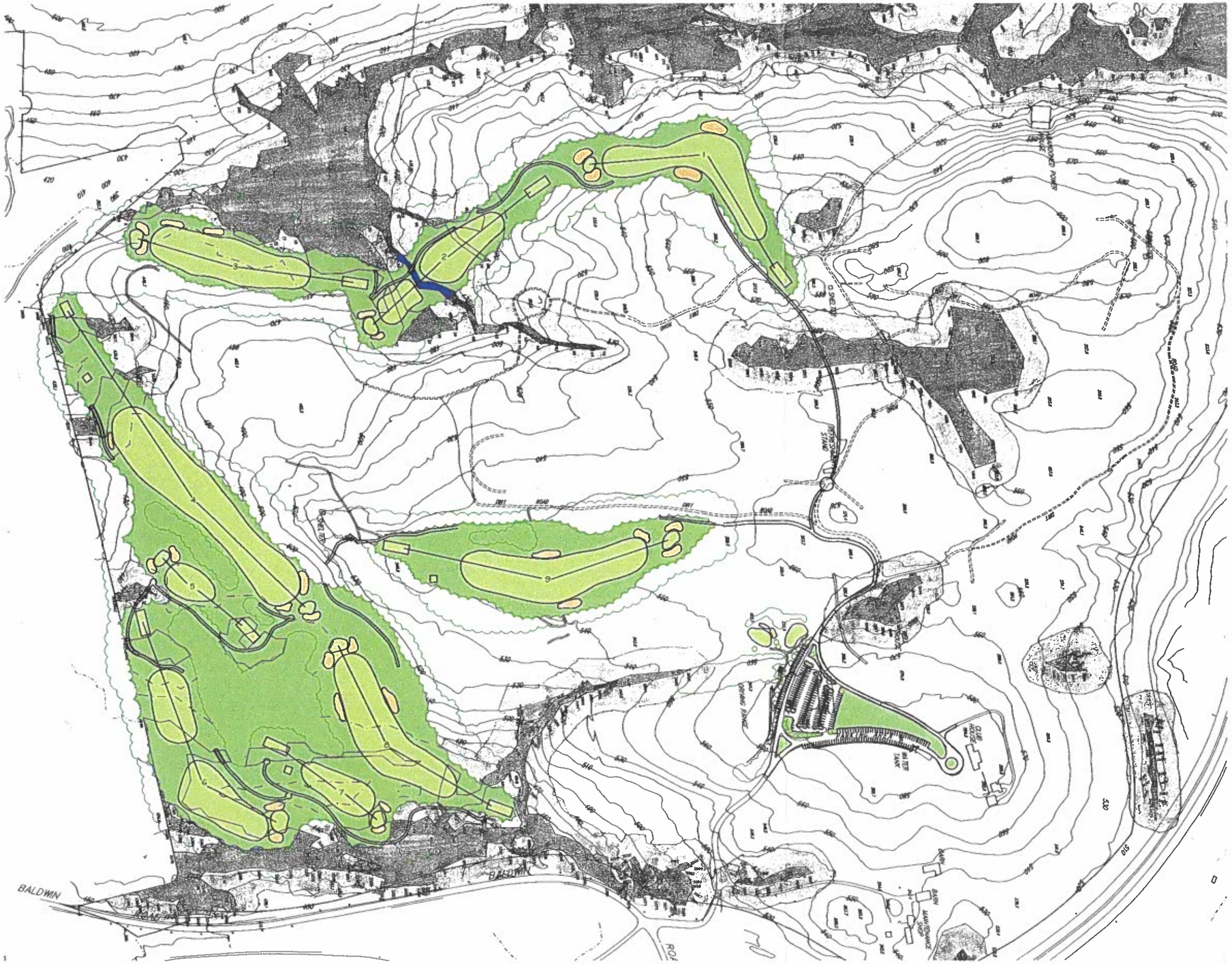

LEGEND

- EXISTING VEGETATION TO REMAIN
- PROPOSED ROUGH
- PROPOSED FAIRWAY
- PROPOSED GREEN & TEE
- PROPOSED BUNKER
- PATH
- WETLAND LIMIT
- WETLAND BUFFER LIMIT
- DRAINAGE SWALE

MOHANSIC GOLF COURSE
MASTER PLAN PHASE II

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MOHANSIC GOLF COURSE: Recommended for 9-Hole Expansion

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LEGEND

- EXISTING HOLE
- EXISTING VEGETATION TO REMAIN
- PROPOSED ROUGH
- PROPOSED FAIRWAY
- PROPOSED GREEN & TEE
- PROPOSED BUNKER
- PROPOSED PAVING
- PATH
- WETLAND LIMIT
- DRAINAGE SWALE

MOHANSIC GOLF COURSE
MASTER PLAN PHASE II

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PLAYLAND PARK
SWIMMING/AQUATIC
FACILITY STUDY

PLAYLAND PARK SWIMMING/
AQUATIC FACILITY STUDY
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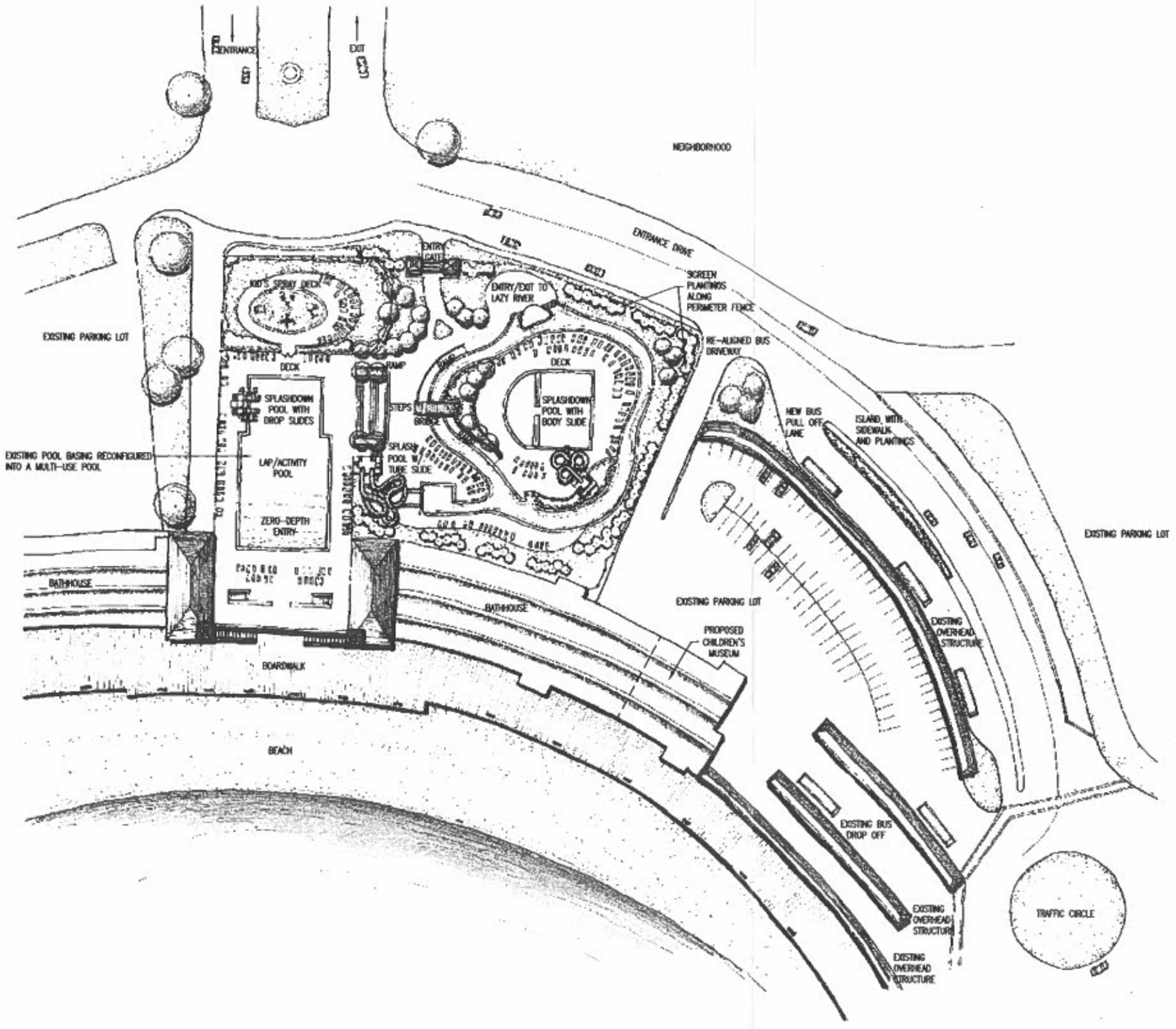

PLAYLAND PARK SWIMMING/
AQUATIC FACILITY STUDY
MASTER PLAN PHASE II

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WESTCHESTER COUNTY PARKS, RECREATION AND CONSERVATION

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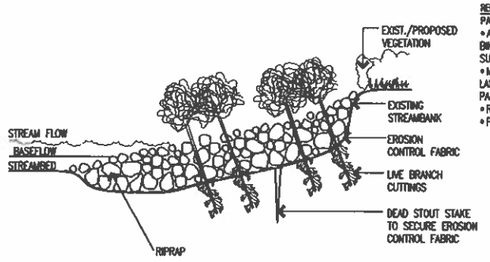
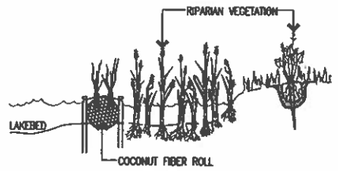
BRONX RIVER PARKWAY RESERVATION

BRONX RIVER PARKWAY RESERVATION

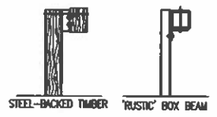
PARKS
WESTCHESTER COUNTY



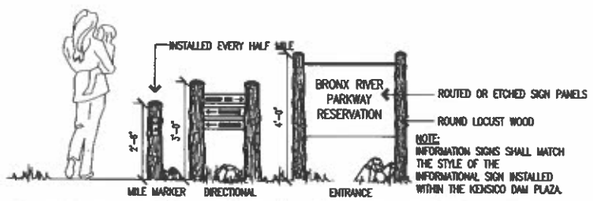
TYPICAL STREAM BANK STABILIZATION DETAIL



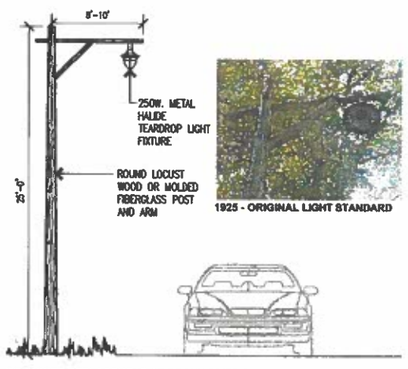
TYPICAL SHORELINE STABILIZATION DETAIL



ROADSIDE GUIDERAIL ALTERNATIVES

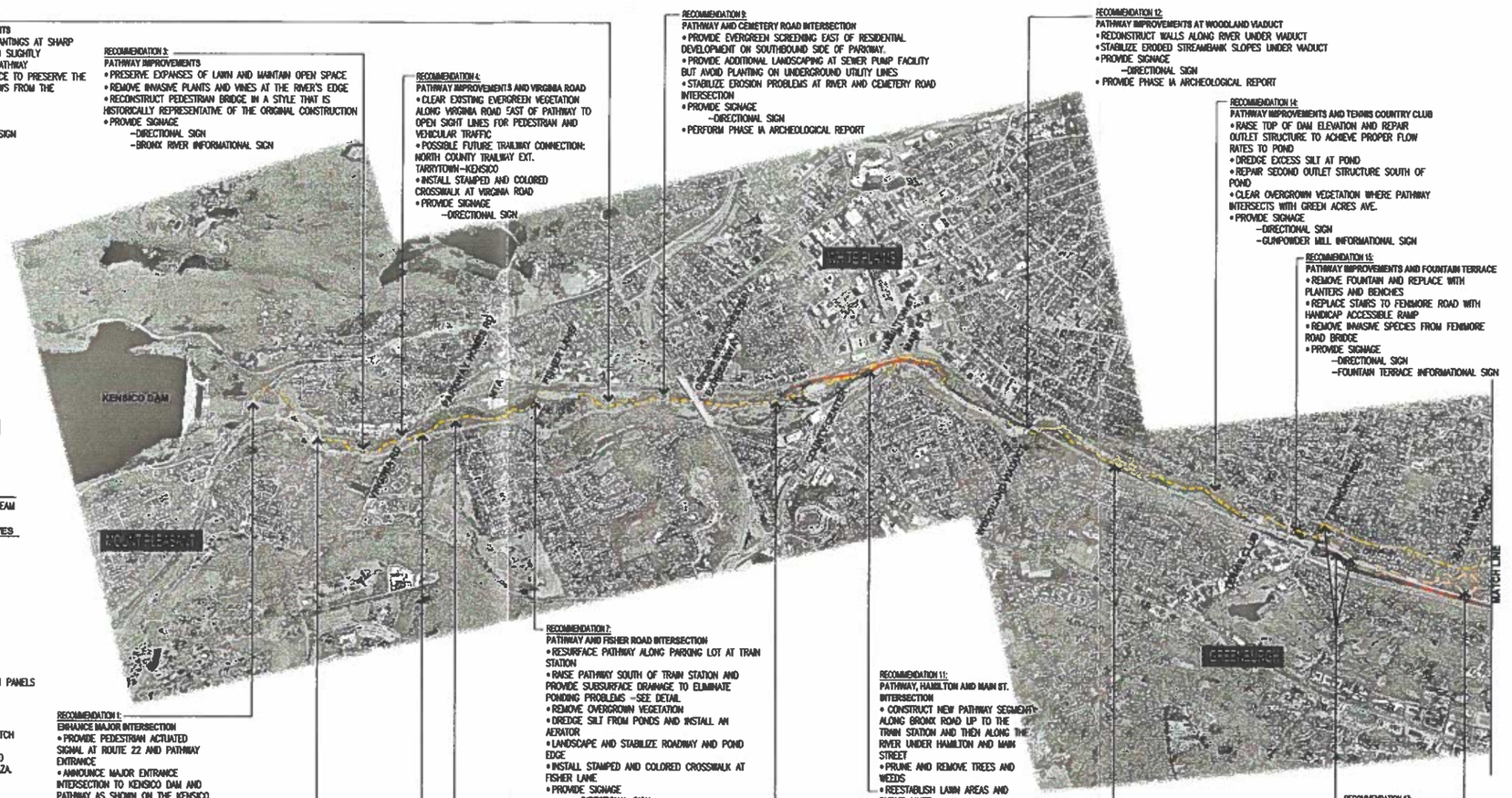


BRONX RIVER PARKWAY RESERVATION SIGNAGE - RECOMMENDED SIGN TYPES FOR VARIOUS USES



1925 - ORIGINAL LIGHT STANDARD

PROPOSED REPLACEMENT OF BRONX RIVER PARKWAY LIGHT STANDARD



RECOMMENDATION 1:
ENHANCE MAJOR INTERSECTION
• PROVIDE PEDESTRIAN ACTUATED SIGNAL AT ROUTE 22 AND PATHWAY ENTRANCE
• ANNOUNCE MAJOR ENTRANCE INTERSECTION TO KENSICO DAM AND PATHWAY AS SHOWN ON THE KENSICO PLAN
• INSTALL STAMPED AND COLORED CROSSWALK AT ROUTE 22 CROSSING
• INSTALL GUIDERAIL ALONG NORTHBOUND PARKWAY BETWEEN THE CIRCLE AND KENSICO DAM ENTRANCE TO DETER ILLEGAL PARKING
• PROVIDE SIGNAGE
–BRONX RIVER RESERV. ENTRANCE SIGN
–PARKWAY INFORMATIONAL SIGN
–DIRECTIONAL SIGN
–FIRST MILEMARKER POST

RECOMMENDATION 2:
PATHWAY IMPROVEMENTS
• REPAVE PATHWAY
• REMOVE INVASIVE SPECIES SUCH AS NORWAY MAPLE TREES LINING EDGE OF PATHWAY
• EXTEND TREE PLANTINGS ALONG PARKWAY
• PLANT WILDFLOWERS ALONG PARKWAY CURVE
• INSTALL STAMPED AND COLORED CROSSWALK AT WASHINGTON AVE.
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN

RECOMMENDATION 3:
PATHWAY IMPROVEMENTS
• PRESERVE EXPANSES OF LAWN AND MAINTAIN OPEN SPACE
• REMOVE INVASIVE PLANTS AND VINES AT THE RIVER'S EDGE
• RECONSTRUCT PEDESTRIAN BRIDGE IN A STYLE THAT IS HISTORICALLY REPRESENTATIVE OF THE ORIGINAL CONSTRUCTION
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN
–BRONX RIVER INFORMATIONAL SIGN

RECOMMENDATION 4:
PATHWAY IMPROVEMENTS AND VIRGINIA ROAD
• CLEAR EXISTING EVERGREEN VEGETATION ALONG VIRGINIA ROAD EAST OF PATHWAY TO OPEN SIGHT LINES FOR PEDESTRIAN AND VEHICULAR TRAFFIC
• POSSIBLE FUTURE TRAILWAY CONNECTION: NORTH COUNTY TRAILWAY EXT. TARRYTOWN–KENSICO
• INSTALL STAMPED AND COLORED CROSSWALK AT VIRGINIA ROAD
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN

RECOMMENDATION 5:
PATHWAY IMPROVEMENTS
• RAISE PATHWAY AND PROVIDE SUBSURFACE DRAINAGE TO ELIMINATE PONDING PROBLEMS–SEE DETAIL
• PROVIDE BENCHES ALONG RIVERS EDGE

RECOMMENDATION 6:
PATHWAY IMPROVEMENTS
• ADD EVERGREEN PLANTINGS AT SHARP BIKEWAY CORNER AND SLIGHTLY SUPERELEVATE THE PATHWAY
• MAINTAIN OPEN SPACE TO PRESERVE THE LAWN AREAS AND VIEWS FROM THE PARKWAY
• REPAVE PATHWAY
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN

RECOMMENDATION 7:
PATHWAY AND FISHER ROAD INTERSECTION
• RESURFACE PATHWAY ALONG PARKING LOT AT TRAIN STATION
• RAISE PATHWAY SOUTH OF TRAIN STATION AND PROVIDE SUBSURFACE DRAINAGE TO ELIMINATE PONDING PROBLEMS –SEE DETAIL
• REMOVE OVERGROWN VEGETATION
• DREDGE SILT FROM PONDS AND INSTALL AN AERATOR
• LANDSCAPE AND STABILIZE ROADWAY AND POND EDGE
• INSTALL STAMPED AND COLORED CROSSWALK AT FISHER LANE
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN

RECOMMENDATION 8:
PATHWAY AND PARKWAY HOMES INTERSECTION
• RAISE PATHWAY AND PROVIDE SUBSURFACE DRAINAGE TO ELIMINATE PONDING PROBLEMS –SEE DETAIL BELOW.
• REALIGN PATHWAY TO MEANDER OR MOW WOODLAND EDGE FOR ADDITIONAL VISUAL INTEREST
• STABILIZE STREAMBANK EROSION PROBLEM UNDERMINING VEHICULAR BRIDGE
• ADD EVERGREEN SCREENING AT MTA REPAIR FACILITY
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN

RECOMMENDATION 9:
PATHWAY AND CEMETERY ROAD INTERSECTION
• PROVIDE EVERGREEN SCREENING EAST OF RESIDENTIAL DEVELOPMENT ON SOUTHBOUND SIDE OF PARKWAY.
• PROVIDE ADDITIONAL LANDSCAPING AT SEWER PUMP FACILITY BUT AVOID PLANTING ON UNDERGROUND UTILITY LINES
• STABILIZE EROSION PROBLEMS AT RIVER AND CEMETERY ROAD INTERSECTION
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN
• PERFORM PHASE IA ARCHEOLOGICAL REPORT

RECOMMENDATION 10:
PARKWAY, COUNTY CENTER AND PATHWAY IMPROVEMENTS.
• REPAVE PARKING LOT AND INSTALL NEW GUIDERAIL 8 FEET WEST OF THE EXISTING GUIDERAIL ALONG THE EASTERNMOST EDGE OF PARKING LOT TO SEPARATE PATHWAY FROM THE PARKING LOT
• PROVIDE ADDITIONAL LANDSCAPING TO DETER GEESE POPULATION WITHIN NORTH AND SOUTH PARKWAY MEDIAN
• DREDGE SILT FROM PONDS AND INSTALL AN AERATOR
• INSTALL TRASH COLLECTOR SCREENS AT TRIBUTARIES
• INSTALL STAMPED AND COLORED CROSSWALK AT BRONX ROAD
• PROVIDE SIGNAGE
–DIRECTIONAL SIGNS
–COUNTY CENTER INFORMATIONAL SIGNS

RECOMMENDATION 11:
PATHWAY, HAMILTON AND MAIN ST. INTERSECTION
• CONSTRUCT NEW PATHWAY SEGMENT ALONG BRONX ROAD UP TO THE TRAIN STATION AND THEN ALONG THE RIVER UNDER HAMILTON AND MAIN STREET
• PRUNE AND REMOVE TREES AND WEEDS
• REESTABLISH LAWN AREAS AND SHRUB LINES
• RECONSTRUCT BRIDGE OVER DAWS BROOK
• INSTALL FLOATABLE TRAP TRASH COLLECTOR AT DAWS BROOK
• RESURFACE PATHWAY SOUTH OF MAIN ST. UP TO PEDESTRIAN BRIDGE CROSSING
• REMOVE INVASIVE SPECIES AT PARKWAY BRIDGES
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN
• PERFORM PHASE IA ARCHEOLOGICAL REPORT

RECOMMENDATION 12:
PATHWAY IMPROVEMENTS AT WOODLAND VIADUCT
• RECONSTRUCT WALLS ALONG RIVER UNDER VIADUCT
• STABILIZE ERODED STREAMBANK SLOPES UNDER VIADUCT
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN
• PROVIDE PHASE IA ARCHEOLOGICAL REPORT

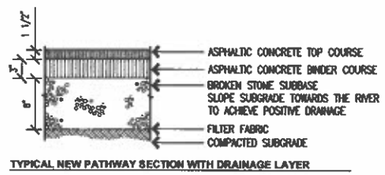
RECOMMENDATION 13:
PATHWAY IMPROVEMENTS
• PROVIDE SUPPLEMENTAL EVERGREEN SCREENING OF RESIDENCES TO EAST
• REPAVE ASPHALT PATH FROM THE VIADUCT TO THE NEXT UNDERPASS
• INSTALL ADDITIONAL STONE DUST SCREENINGS AT BARE AND BUMPY LOCATIONS ALONG EXISTING STONE DUST PATHWAY
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN

RECOMMENDATION 14:
PATHWAY IMPROVEMENTS AND TENNIS COUNTRY CLUB
• RAISE TOP OF DAM ELEVATION AND REPAIR OUTLET STRUCTURE TO ACHIEVE PROPER FLOW RATES TO POND
• DREDGE EXCESS SILT AT POND
• REPAIR SECOND OUTLET STRUCTURE SOUTH OF POND
• CLEAR OVERGROWN VEGETATION WHERE PATHWAY INTERSECTS WITH GREEN ACRES AVE.
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN
–GUNPOWDER MILL INFORMATIONAL SIGN

RECOMMENDATION 15:
PATHWAY IMPROVEMENTS AND FOUNTAIN TERRACE
• REMOVE FOUNTAIN AND REPLACE WITH PLANTERS AND BENCHES
• REPLACE STAIRS TO FENIMORE ROAD WITH HANDICAP ACCESSIBLE RAMP
• REMOVE INVASIVE SPECIES FROM FENIMORE ROAD BRIDGE
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN
–FOUNTAIN TERRACE INFORMATIONAL SIGN

RECOMMENDATION 16:
PATHWAY IMPROVEMENTS AND FUTURE CONNECTIONS
• ADD BIKEWAY SIGNAGE AND STRIPING LANES ALONG FOXMEADOW ROAD
• RECONSTRUCT ORIGINAL BIKEWAY TRAIL BETWEEN SOUTHBOUND PARKWAY AND THE BRONX RIVER ALONG THE ORIGINAL 1925 ALIGNMENT
• INSTALL STAMPED AND COLORED CROSSWALK AT FENIMORE RD
• RECONSTRUCT THE OLD WALKING TRAIL BETWEEN NORTHBOUND PARKWAY AND THE RESIDENCES. CONNECT THIS TRAIL INTO THE PROPOSED WALKING TRAIL RECONSTRUCTION WITHIN BUTLER WOODS
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN

RECOMMENDATION 17:
PATHWAY IMPROVEMENTS AND BUTLER WOODS
• CONSTRUCT PATHWAY LOOP WITHIN BUTLER WOODS TRACT AND INSTALL STEPPING STONES OVER FISHER AND FOX MEADOW BROOKS. CONNECT THESE WALKING TRAILS INTO THE PROPOSED WALKING TRAIL FROM FENIMORE ROAD
• INSTALL BENCHES ALONG THE WALKING TRAILS
• PROVIDE SIGNAGE
–DIRECTIONAL SIGN
–BUTLER WOODS INFORMATIONAL SIGN



TYPICAL NEW PATHWAY SECTION WITH DRAINAGE LAYER

LEGEND
EXISTING TRAILS
PROPOSED WALKING TRAILS
PROPOSED BIKE TRAILS

BRONX RIVER PARKWAY RESERV.
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BRONX RIVER PARKWAY RESERVATION

PARKS
WESTCHESTER COUNTY

RECOMMENDATION 19:
PATHWAY IMPROVEMENTS AT CRANE AND POPHAM ROAD
- RECONSTRUCT PATHWAY WITH ADDITIONAL STONE DUST ALONG PATHWAY FROM POPHAM ROAD TO SCARSDALE COMMUTER PEDESTRIAN BRIDGE
- CONSTRUCT FIELDSTONE WALLS AND REGRADE DISTURBED AREAS ALONG PATHWAY. STABILIZE RIVER BANKS AT THE CRANE ROAD BRIDGE ABUTMENTS
- DREDGE SILT WITHIN POND AND REMOVE SILTATION ISLANDS AND INVASIVE SPECIES ALONG POND'S EDGE
- INSTALL STAMPED AND COLORED CROSSWALK AT POPHAM RD
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN
  - –CRAWFORD MILL INFORMATIONAL SIGN

RECOMMENDATION 18:
PATHWAY IMPROVEMENTS FROM POPHAM ROAD TO GARTH WOODS
- RESURFACE EXISTING ASPHALT PATHWAY FROM POPHAM ROAD UP THE HILL AT GARTH ROAD AND BEHIND GARTH WOODS.
- INSTALL REMOVABLE BOLLARDS AT PATHWAY INTERSECTION WITH GARTH RD TO PREVENT UNAUTHORIZED VEHICLE ACCESS
- REMOVE SILT AT THE TRIBUTARY AT THE RIVER'S CURVE SOUTH OF THE RIVER'S CROSSING WITH NORTH PARKWAY
- RESTORE REMAINING A–FRAME PEDESTRIAN BRIDGE
- PROVIDE CONTINUOUS STONE DUST WALKING TRAIL FROM POPHAM ROAD BRIDGE ALONG THE BRONX RIVER TO THE A–FRAME BRIDGE
- REPLACE DAMAGED BENCHES
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN

RECOMMENDATION 22:
PATHWAY IMPROVEMENTS AT LEEWOOD ROAD
- PROVIDE EVERGREEN SCREENING ALONG PATHWAY TO HIDE VIEWS OF METRO–NORTH
- ADD WETLAND PLANTINGS AND WILDFLOWER MIXTURES WITHIN EXISTING WET LAWN EXPANSES AT LEEWOOD ROAD
- STABILIZE RIVERBANKS SOUTH OF LEEWOOD RD.
- INSTALL STAMPED AND COLORED CROSSWALK AT LEEWOOD ROAD
- THIN OUT AND REMOVE DEAD BRANCHES FROM WITHIN THE PINE TREE GROVE TO ALLOW FOR THE UNDERSTORY VEGETATION TO REESTABLISH
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN

RECOMMENDATION 23:
PATHWAY IMPROVEMENTS AT COUNTY MAINTENANCE FACILITY
- USE AREA BEHIND MAINT. AS SPOIL AREA FOR DREDGED MATERIAL
- PROVIDE EVERGREEN SCREENING AT PARKING LOT
- CREATE SENSE OF ENTRY AT PATHWAY ADJACENT TO MAINTENANCE BUILDING WITH LANDSCAPING AND SIGNAGE
- INSTALL STAMPED AND COLORED CROSSWALK AT THOMPSON ROAD
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGNS
  - –PATHWAY ENTRANCE SIGN

RECOMMENDATION 24:
PATHWAY, PARKWAY AT CRESTWOOD LAKE
- CONSTRUCT NEW PATHWAY AROUND THE ENTIRE PERIMETER OF THE LAKE
- RESURFACE PATHWAY FROM THOMPSON STREET TO READ ROAD
- RAISE PATHWAY AND PROVIDE SUBSURFACE DRAINAGE TO ELIMINATE PONDING PROBLEMS–SEE DETAIL
- AERATE AND DREDGE POND AND SILTATION ISLANDS WITHIN CRESTWOOD LAKE
- REMOVE DAMAGED PAR COURSE EQUIPMENT
- INSTALL NEW BENCHES
- STABILIZE SLOPED LAWN AREAS EAST OF LAKE SHORE
- LANDSCAPE LAKES EDGE AT PARKWAY OVAL LAWN AREA TO DETER GEESE POPULATION
- RESEED, LANDSCAPE AND CLEANUP AREA AT READ ROAD INTERSECTION
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN
  - –COTTON MILL INFORMATIONAL SIGN

RECOMMENDATION 25:
PATHWAY IMPROVEMENTS AT SCARSDALE ROAD SOUTH
- PROVIDE SIGNALIZED PEDESTRIAN CROSSING AT SCARSDALE RD.
- INSTALL STAMPED AND COLORED CROSSWALKS
- PROVIDE A PATHWAY CONNECTION TO GOV. MALCOLM WILSON PARK ALONG SCARSDALE ROAD OR WITHIN THE RESERVATIONS WOODLANDS SOUTH OF THE SCOUT CABIN
- INSTALL SITE FURNISHINGS AT MALCOM WILSON PARK
- INSTALL STAMPED AND COLORED CROSSWALK AT SCARSDALE ROAD
- OPEN VIEWS TO RIVER AND REMOVE OR THIN OVERGROWN PLANT MATERIAL AT RIVER'S EDGE NORTH OF TUCKAHOE RD
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN
  - –GOV. MALCOLM WISLON PARK ENTRANCE SIGN
  - –OLD YONKERS MILL INFORMATIONAL SIGN

RECOMMENDATION 27:
PATHWAY IMPROVEMENTS FROM PONDFIELD ROAD TO DEWITT AVE.
- RESURFACE ASPHALT PATHWAY ON WEST SIDE OF RIVER TO PALMER AVE.
- ADD EVERGREEN SCREENING AT MAINTENANCE AREA ON NORTH END OF THE HOSPITAL PARKING GARAGE
- REMOVE INVASIVE SPECIES ALONG RIVER AND AT BRIDGES
- PROVIDE NEW ASPHALT PATHWAY FROM PALMER ROAD TO PARKWAY RAMP
- CONSTRUCT A RAMP SOUTH OF PALMER AVENUE ADJACENT TO STAIRS
- PROVIDE NEW ASPHALT PATHWAY LOOP FROM PARKWAY RAMP TO DEWITT AVE OVERPASS
- INSTALL BENCHES, LANDSCAPING, RESEED LAWN AREAS AND OPEN UP RIVER'S EDGE WITHIN NEW PATHWAY CONNECTIONS
- INSTALL STAMPED AND COLORED CROSSWALKS AT PONDFIELD RD, PALMER AVE. AND DEWITT AVE.
- ADD LANDSCAPE PLANTINGS ON SOUTHBOUND PARKWAY SIDE TO SCREEN THE PARKING LOTS
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN

RECOMMENDATION 28:
PATHWAY FUTURE CONNECTION TO SCOUT FIELD
- PROVIDE NEW PATHWAY FROM DEWITT AND PATTON AVENUE INTERSECTION UNDERNEATH MIDLAND AVENUE BRIDGE AND SOUTH TO SCOUT FIELD
- CONNECT NEW PATHWAY INTO THE STREET SYSTEM
- PROVIDE SIGNAGE
  - –ENTRANCE SIGN
  - –DIRECTIONAL SIGN

RECOMMENDATION 26:
PATHWAY IMPROVEMENTS AT GARTH WOODS AND HARNEY ROAD
- RECONSTRUCT ASPHALT PATHWAY FROM BEHIND GARTH WOODS TO HARNEY ROAD
- CONSTRUCT NEW PATHWAY SETBACK OF ROADWAY EDGE FROM SOUTH OF GARTH WOODS APARTMENTS TO THE INTERSECTION OF HARNEY ROAD
- DREDGE SILT FROM POND BETWEEN NORTH AND SOUTH PARKWAY
- INSTALL STAMPED AND COLORED CROSSWALK AT HARNEY ROAD
- STABILIZE RIVER BANKS SOUTH OF HARNEY ROAD
- PROVIDE LANDSCAPING AT THE POND EDGES BETWEEN NORTH AND SOUTH PARKWAY
- INSTALL PROTECTIVE MESH AT EXPOSED OUTLET PIPES FOR PEDESTRIAN SAFETY
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN
- PERFORM PHASE IA ARCHEOLOGICAL REPORT

RECOMMENDATION 21:
PATHWAY IMPROVEMENTS AND GAS STATION REUSES
- OPEN UP THE RIVER'S EDGE AND INSTALL LOW RIPARIAN PLANTINGS FOR VIEWS AND INTERACTION
- "MOTHBALL" WEATHER PROOF AND STABILIZE THE EXISTING GAS STATION BUILDING ON THE WEST SIDE OF THE PARKWAY
- CONSTRUCT NEW HISTORICALLY COMPATIBLE BUILDING ADDITION ADJACENT TO THE EXISTING GAS STATION ON THE EAST SIDE OF THE PARKWAY AS SHOWN ON THE CONCEPT PLAN AND SKETCH
- BUILDING REUSES SUCH AS SEASONAL CONCESSION STAND AND AN INFORMATION CENTER SHOULD BE CONSIDERED SINCE THEY CATER TO BOTH THE PARKWAY AND PATHWAY USERS
- PROVIDE BENCHES AND PICNIC TABLES
- STABILIZE RIVER'S EDGE AT VARIOUS LOCATIONS ALONG RIVER
- PROVIDE BERMS AND LANDSCAPING WHERE PATHWAY COMES CLOSE TO PARKWAY
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN
  - –GAS STATION BUILDING INFORMATIONAL SIGN

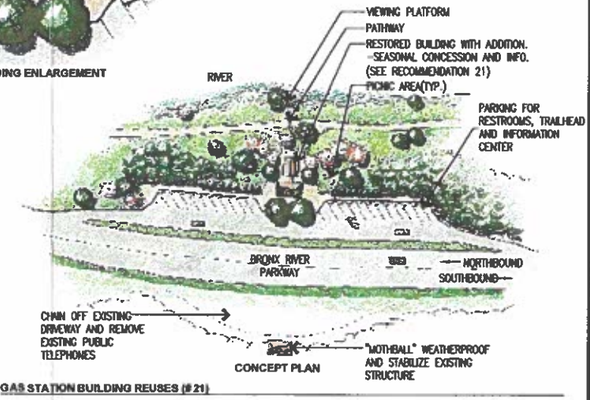
RECOMMENDATION 20:
PATHWAY IMPROVEMENTS AT BRONXVILLE LAKE
- INSTALL STAMPED AND COLORED CROSSWALK AT TUCKAHOE AVENUE
- WIDEN WESTERN PATH SOUTH OF BRONXVILLE LAKE TO 8 FEET
- POSSIBLE FUTURE TRAILWAY CONNECTION TO SOUTH COUNTY TRAILWAY
- CONSTRUCT WALKING TRAIL UP TO A CLEARED VIEWING PLATFORM UPON KNOLL AT LAKES NORTHEASTERN EDGE
- REMOVE INVASIVE SPECIES FROM LAKE EDGE AND STABILIZE SHORELINE AT OVERUSED AND ERODED AREAS
- AERATE LAKE, DREDGE AND REMOVE SILTATION ISLANDS. PLACE DREDGED MATERIAL TO INCREASE SIZE AND ACCESSIBILITY TO THE PEAK OF THE KNOLL
- ADD LANDSCAPE PLANTINGS ON SOUTHBOUND PARKWAY SIDE TO SCREEN RESIDENTIAL DEVELOPMENT
- PROVIDE SIGNAGE
  - –DIRECTIONAL SIGN
  - –SWAIN CUTLERY MILL INFORMATIONAL SIGN
- PERFORM PHASE IA ARCHEOLOGICAL REPORT

GENERAL RECOMMENDATIONS:
1. REPLACE STANDARD NYSDOT COBRA–HEAD ROADWAY LIGHTING WITH HISTORICALLY INFLUENCED LIGHTING STANDARDS REPRESENTATIVE OF THE ERA IN WHICH THE PARKWAY WAS
2. CONSTRUCTED AT SPECIAL LOCATIONS.
3. REPLACE GUIDERAILS WITH A RUSTIC GUIDERAIL ALTERNATIVE.
4. PAINT THE BACKS OF THE EXISTING PARKWAY SIGNS RUST COLORED.
5. ELIMINATE ALL JERSEY SHAPE BARRIERS AND REPLACE WITH MORE CONTEXTUALLY SENSITIVE STYLE BARRIERS.
6. STABILIZE SHORELINES AND STREAMBANKS WITH RIPARIAN VEGETATION AND BIOENGINEERING METHODS.
7. RESTORE ORIGINAL HIGHWAY DESIGN CONCEPTS WITH CONSISTENT LANE WIDTHS AND SHOULDERS.
8. INSTALL ADDITIONAL BENCHES WITHIN THE PATHWAY SYSTEM.
9. REMOVE VINES AND NON–NATIVE INVASIVE SPECIES AND OPEN THE RIVER'S EDGE UP FOR VIEWS.
10. PROVIDE CONSISTENT HISTORICALLY SENSITIVE CROSSWALK TREATMENTS AND SIGNAGE AT ALL PATHWAY AND LOCAL
11. ROADWAY INTERSECTIONS.
    INSTALL PLANT MATERIAL IN COORDINATION WITH PRESENT MAINTENANCE PRACTICES.
12. CREATE A G.I.S. MAP OF ALL EASEMENTS, TOWN AND COUNTY JURISDICTIONS AND RESPONSIBILITY FOR OWNERSHIP, MAINTENANCE AND LICENSE AGREEMENTS.
13. PERFORM A PHASE IA ARCHEOLOGICAL REPORT.
14. PROVIDE SIGNAGE PROGRAM STUDY.
    PROVIDE A PATHWAY LOCATIONS STUDY TO CONNECT PATHWAY WITH THE SOUTHERN LOOP.

LEGEND
- EXISTING TRAILS
- PROPOSED WALKING TRAILS
- PROPOSED BIKE TRAILS

PERSPECTIVE

BUILDING ENLARGEMENT



CONCEPT PLAN

GAS STATION BUILDING REUSES (# 21)

BRONX RIVER PARKWAY RESERV.
MASTER PLAN PHASE II

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WESTCHESTER COUNTY PARKS, RECREATION AND CONSERVATION

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MAY 30, 2003

SHEET 2 OF 2

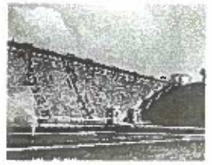
PARKS
WESTCHESTER COUNTY

KENSICO DAM PLAZA

KENSICO DAM PLAZA

PARKS
WESTCHESTER COUNTY

RECOMMENDATION #9:
NATURAL RESOURCE MANAGEMENT IN ALL NATURALIZED AREAS
- REMOVE ALL INVASIVE PLANTS
- PROVIDE SLOPE STABILIZATION MEASURES
- REPLANT SLOPES WITH NATIVE VEGETATION.

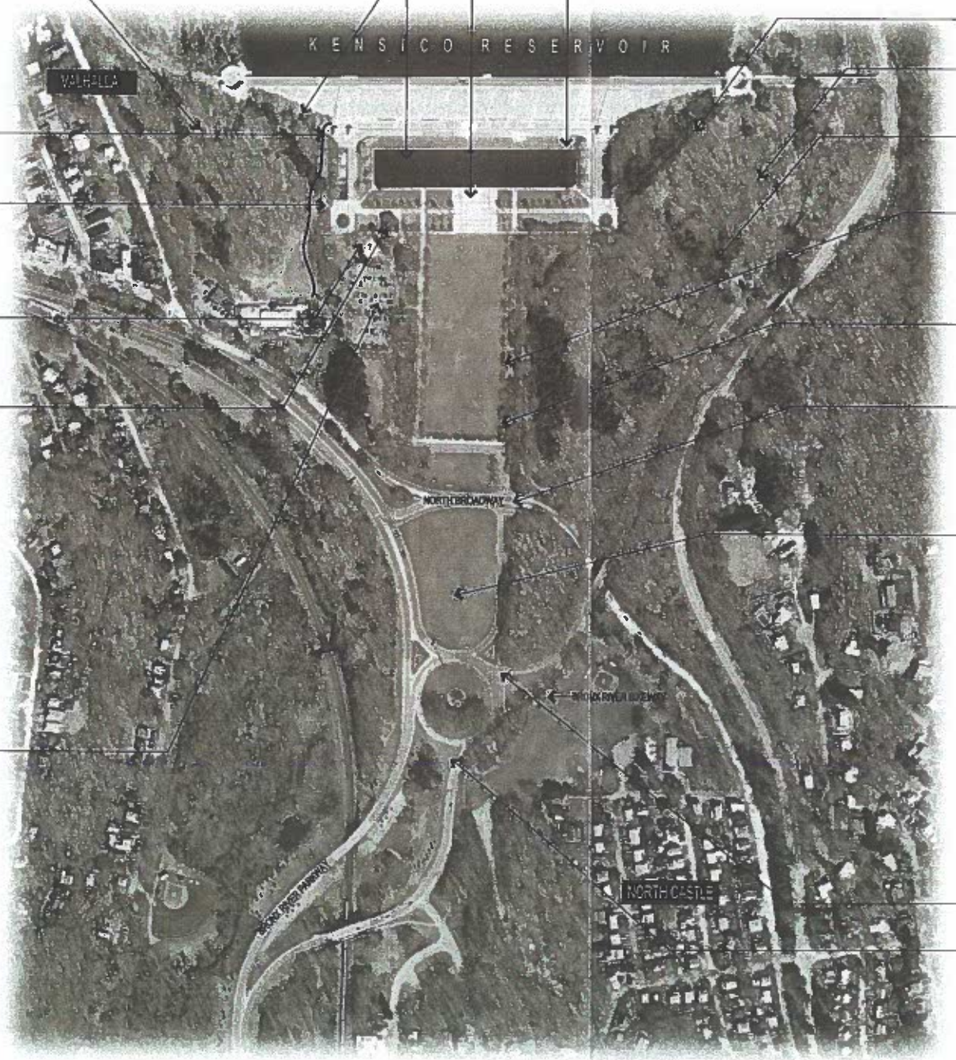


RECOMMENDATION #11:
REMOVE VINES AND OVERGROWTH FROM DAM MARGINS AND RE-ACTIVATE THREE EXISTING JETS IN REFLECTING POOL
- REMOVE VINES, GROUNDCOVERS AND OTHER INVASIVE PLANTS TO UNCOVER STONEWORK AND EXISTING LAWN PANELS SHOWN IN ARCHIVAL PHOTO
- RESTORE JETS TO PROVIDE VISUAL FOCAL POINTS TO THE BOTTOM OF THE DAM AND PROVIDE COOLING EFFECTS DURING SUMMER
- ACTIVE WATER MAY DISCOURAGE CANADA GOOSE POPULATION FROM GATHERING IN AND AROUND THE POOL

RECOMMENDATION #10:
RECONSTRUCT PAVEMENT FOR ROLLER BLADING
- PROVIDE A LARGER AREA OF SMOOTH PAVEMENT TO PROVIDE ROLLER BLADERS WITH AN IMPROMPTU "RINK" FOR HOCKEY OR OTHER IN-LINE STYLE SKATING

RECOMMENDATION #8:
RECONSTRUCT INNER PATH AROUND REFLECTING POOL
- INSTALL UNIT PAVERS REMINISCENT OF VINTAGE PAVEMENT ON SITE TO ACCOMODATE ALL USERS AT THE WATER'S EDGE.

RECOMMENDATION #8:
RECONSTRUCT EXISTING STAIRS TO TOP OF DAM
- PROVIDE A DECORATIVE OVERLAY ON THE EXISTING STEPS
- ADD HANDRAILS
- REINFORCE PLANTINGS
- PROVIDE SLOPE STABILIZATION MEASURES ON EACH SIDE OF THE STAIRS
- MANAGE STORMWATER FLOW AT TOP OF SLOPE TO REDUCE EROSION



RECOMMENDATION #12:
PROVIDE ACCESS TO BOTTOM OF DAM FOR MAINTENANCE VEHICLES
- PROVIDE ACCESS EASEMENT AND DRIVEWAY FROM ADJOINING CHURCH PARKING LOT.

RECOMMENDATION #8:
RECONSTRUCT EXISTING STAIRS TO TOP OF DAM
- PROVIDE A DECORATIVE OVERLAY ON THE EXISTING STEPS
- ADD HANDRAILS
- REINFORCE PLANTINGS
- PROVIDE SLOPE STABILIZATION MEASURES ON EACH SIDE OF THE STAIRS
- MANAGE STORMWATER FLOW TO REDUCE EROSION

RECOMMENDATION #13:
ENHANCE/EXPAND PLAY EQUIPMENT AREA
- PROVIDE ADDITIONAL PLAY EQUIPMENT WITH APPROVED SAFETY SURFACING
- INSTALL BENCHES AND DRINKING FOUNTAINS

RECOMMENDATION #7:
REPAVE EXISTING BRICK ROAD
- REPLACE BROKEN AND MISSING PAVERS
- PROVIDE A PAVING EDGE TREATMENT AND PROTECTIVE FENCING AND BOLLARDS.

RECOMMENDATION #9:
NATURAL RESOURCE MANAGEMENT IN ALL NATURALIZED AREAS
- REMOVE ALL INVASIVE PLANTS
- PROVIDE SLOPE STABILIZATION MEASURES
- REPLANT SLOPES WITH NATIVE VEGETATION.

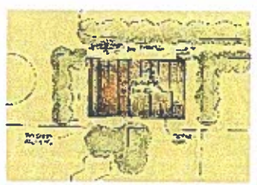
RECOMMENDATION #5:
AUGMENT EXISTING ALLEE
- PROVIDE AN ADDITIONAL LAYER TO THE ALLEE TO PROMOTE LONG RANGE SURVIVAL OF THE FORMAL NATURE OF THE SITE, EVEN THROUGH PERIODS OF PLANT REPLACEMENT.
- SHADE TOLERANT GROUND COVERS PLANTED UNDER ALLEE WILL REDUCE NECESSARY LAWN CARE, AND PROVIDE VISUAL UNITY, EROSION CONTROL AND TREE PROTECTION FROM MAINTENANCE OPERATIONS.

RECOMMENDATION #4:
ENHANCE VEHICULAR ENTRY TO GREAT LAWN FOR SPECIAL EVENTS
- IDENTIFY VEHICULAR ENTRY TO THE LAWN BY PROVIDING VERTICAL CIRCULATION INDICATORS TO DEMARCATE PARKING ENTRY FOR LARGE SCALE EVENTS.

EXISTING WOOD SIDED CONCESSION BUILDING

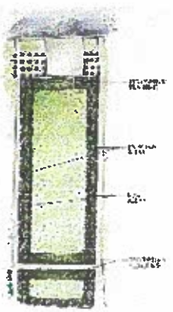
RECOMMENDATION #14:
REFACE AND EXPAND EXISTING PARK BUILDING TO PROVIDE ADDITIONAL INTERIOR SPACE FOR ENLARGED RESTROOMS, WCPRC AND BRPC USES.
- PROVIDE EXTERIOR STONE VENEER TO COMPLEMENT STONE ON DAM
- INCREASE FLOOR AREA OF THE PARK BUILDING TO THE WEST TO PROVIDE ADDITIONAL INTERIOR SPACE.
- JOIN THE NEW AND OLD PORTIONS OF THE BUILDING VISUALLY WITH A NEW ROOF MORE IN CONTEXT WITH THE SITE.

VIEW LOOKING EAST AT NEW ADDITION AND NEW STONE VENEER



PLAN VIEW

RECOMMENDATION #3:
MAJOR ENTRY TO KENSICO DAM PLAZA WITH CONNECTION TO THE BRONX RIVER BIKEWAY
- CREATE A PEDESTRIAN/BICYCLE FRIENDLY INTERSECTION WITH THE ADDITION OF CROSSWALKS, SIGNAGE AND A PEDESTRIAN ACTUATED SIGNAL.
- ENHANCE VEHICULAR ENTRY WITH PLANTINGS AND A MORE PROMINENT ENTRY BUILDING AND POSSIBLY A FORMAL PLANTED MEDIAN.
- RECONFIGURE ENTRY TO BRICK PATH TO TOP OF DAM.



RECOMMENDATION #10:
INCREASE PLANTINGS FOR ALL LAWN AREAS
- EXTEND DOUBLE ALLEE INTO SOUTHERN AREA TO ENHANCE VISUAL ASPECT OF DAM PLAZA AND UNITE FRAGMENTED ELEMENTS
- REPLACE TURF MONOCULTURE WITH BROAD PATTERNS OF GROUND COVER TO PROVIDE:
  - REDUCED LAWN MAINTENANCE
  - GOOSE EXCLUSION
  - VISUAL INTEREST FROM TOP OF DAM OR AERIAL VIEWING
- PROVIDE STREET TREE PLANTINGS LINING NORTH BROADWAY TO ANNOUNCE THE PARK TO VEHICLES PASSING THROUGH THE SITE.

RECOMMENDATION #5:
PROVIDE ADDITIONAL PAVEMENTS FOR HEAVY USE LOCATIONS
- INSTALL DECORATIVE PAVEMENTS TO IMPROVE ACCESS FROM THE PARKING LOT TO THE PARK BUILDING, PLAY EQUIPMENT AND PICNIC AREAS
- PROVIDE DECORATIVE PAVEMENT AROUND PICNIC TABLES WHERE LOW SUNLIGHT AND HEAVY PEDESTRIAN TRAFFIC HAS ELIMINATED ALL TURFGRASS.
- PROVIDE A CONCRETE PAD FOR DUMPSTERS TO FACILITATE TRASH COLLECTION.
- INDICATE PEDESTRIAN CONNECTIONS TO THE MAIN LAWN AREA WITH DECORATIVE PAVEMENTS, DROP CURBS AND PLANTINGS.

RECOMMENDATION #2:
CREATE PRELIMINARY GATEWAY
- ENHANCE THIS VEHICULAR ENTRY WITH FORMAL PLANTINGS AND SIGNAGE, CREATING A GATEWAY INTO THE PARK.

RECOMMENDATION #1:
ENHANCE VIEW OF THE DAM
- ENHANCE FIRST MAJOR VIEW OF THE DAM AND DAM PLAZA BY REMOVING SHRUBS AND SECONDARY GROWTH FROM THE TRAFFIC CIRCLE AND REINFORCING THE FORMALITY OF THE MAIN ALLEE WITH ADDITIONAL PLANTINGS.

KENSICO DAM PLAZA
MASTER PLAN PHASE II

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WESTCHESTER COUNTY PARKS, RECREATION AND CONSERVATION

TOLLMER ASSOCIATES

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MAY 30, 2003

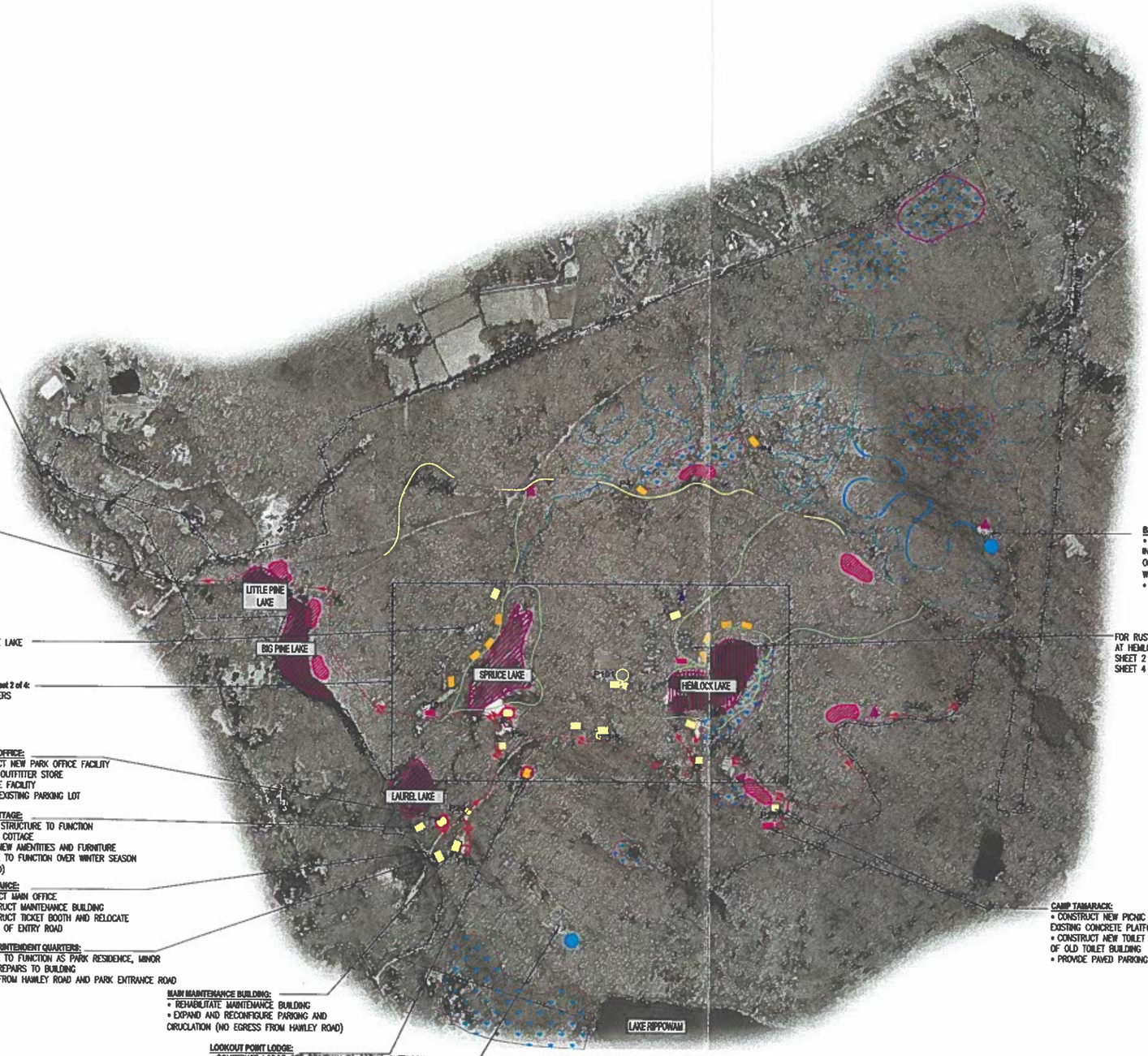
SHEET 1 OF 1

PARKS
WESTCHESTER COUNTY

MOUNTAIN LAKES PARK

MOUNTAIN LAKES PARK

PARKS
WESTCHESTER COUNTY



LEGEND - PROPOSED FACILITIES

- = PROPERTY LINE
- = PAVED ROADWAY (ARROW DENOTES TRAFFIC FLOW)
- = GRAVEL ROADWAY
- = GRAVEL WALKWAY
- = MULTI-USE NATURE TRAILS
- = MULTI-USE LODGE (TOTAL=12), CIRCLE DENOTES WINTERIZATION OF STRUCTURE
- = PAVILION
- = VARIOUS PARK BUILDINGS (OFFICES, MAINTENANCE BUILDINGS, INFIRMARY, AMPHITHEATER), CIRCLE DENOTES WINTERIZATION OF STRUCTURE
- = OBSERVATION TOWERS
- = WATER TANK
- = LEAN-TO SITES (TOTAL= 63)
- = TENT SITES (TOTAL=32 SITES)
- P25 = PARKING (NUMBER DENOTES QUANTITY OF PAVED AND OVERFLOW AREAS)
- = EXISTING LAKES
- = REHABILITATE/EXPAND EXISTING LAKE
- = EXISTING DELINEATED WETLANDS TO REMAIN

HAWLEY ROAD TO ROUTE 121 & 124:
- REPLACE EXISTING SIGNS ON ROUTE 121 AND 124 WITH UPDATED PARK SIGNS
- REPLACE SIGNS ON HAWLEY ROAD WITH RUSTIC CHARACTER WOOD SIGNS

PARK EXIT:
- ADD DIRECTIONAL SIGNS 'EXIT ONLY--EXCEPT EMERGENCY VEHICLES AND DELIVERY VEHICLES'
- POTENTIAL SERVICE EGRESS AND FUTURE CONSTRUCTION ACCESS

FOR RUSTIC CABIN CLUSTERS AT SPRUCE LAKE SEE SHEET 2 OF 4 AND SHEET 3 OF 4.

ENLARGEMENT PLAN See Sheet 2 of 4:
FOR RUSTIC CABIN CLUSTERS SEE SHEET 2 OF 4 AND SHEET 3 OF 4.

MAIN PARK OFFICE:
- CONSTRUCT NEW PARK OFFICE FACILITY AND CAMP OUTFITTER STORE
- WINTERIZE FACILITY
- EXPAND EXISTING PARKING LOT

LAUREL COTTAGE:
- EXISTING STRUCTURE TO FUNCTION AS RENTAL COTTAGE
- INSTALL NEW AMENITIES AND FURNITURE
- CONTINUE TO FUNCTION OVER WINTER SEASON (WINTERIZED)

PARK ENTRANCE:
- CONSTRUCT MAIN OFFICE
- RECONSTRUCT MAINTENANCE BUILDING
- RECONSTRUCT TICKET BOOTH AND RELOCATE TO CENTER OF ENTRY ROAD

PARK SUPERINTENDENT QUARTERS:
- CONTINUE TO FUNCTION AS PARK RESIDENCE, MINOR COSMETIC REPAIRS TO BUILDING
- SCREEN FROM HAWLEY ROAD AND PARK ENTRANCE ROAD

MAIN MAINTENANCE BUILDING:
- REHABILITATE MAINTENANCE BUILDING
- EXPAND AND RECONFIGURE PARKING AND CIRCULATION (NO EGRESS FROM HAWLEY ROAD)

LOOKOUT POINT LODGE:
- CONSTRUCT LODGE OFF DRIVEWAY TO SCENIC OVERLOOK

LOOKOUT POINT:
- ENHANCE OVERLOOK LOCATION
- ADDRESS EROSION CONTROL PROBLEMS ALONG DRIVEWAY, USE EROSION CONTROL PLANTING AND INSTALL EROSION CONTROL FABRIC THROUGHOUT
- INSTALL ROLLED GRAVEL SURFACE ALONG ENTIRE LENGTH OF DRIVE TO LOOK OUT POINT

BAILEY MOUNTAIN:
- CONSTRUCT LOOKOUT TOWER AND INFORMATION SIGNS FOR HISTORY OF SITE (HIGHEST ELEVATION IN WESTCHESTER COUNTY ELEVATION 982)
- CONSTRUCT TENT SITES

FOR RUSTIC CABIN CLUSTERS AT HEMLOCK LAKE SEE SHEET 2 OF 4 AND SHEET 4 OF 4.

CAMP TAMARACK:
- CONSTRUCT NEW PICNIC PAVILION, USE EXISTING CONCRETE PLATFORM AS PAVILION BASE
- CONSTRUCT NEW TOILET BUILDING AT LOCATION OF OLD TOILET BUILDING
- PROVIDE PAVED PARKING LOT

MOUNTAIN LAKES PARK
MASTER PLAN PHASE II

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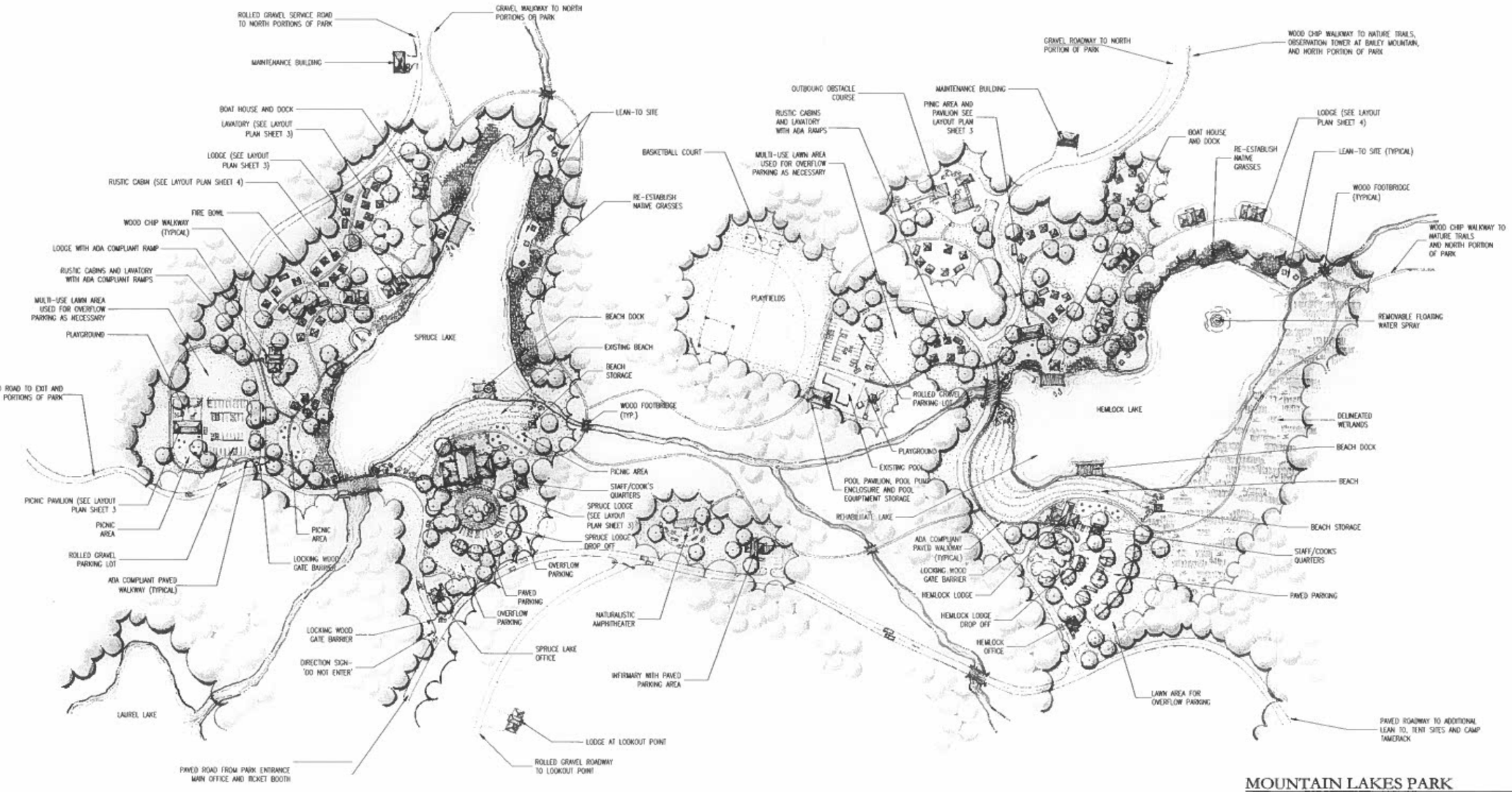
MOUNTAIN LAKES PARK

PARKS
WESTCHESTER COUNTY



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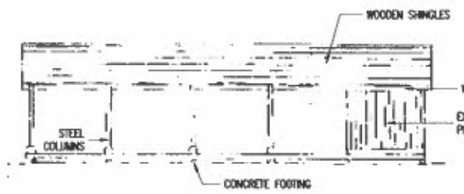
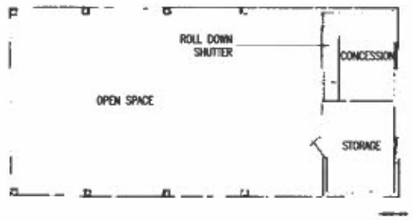




MULTI-USE PAVILION

MULTI-USE PICNIC PAVILION, AREA FOR CONCESSION STAND FOR PRIVATE PICNICING, SEPERATE AREA FOR POOL PUMPS AND STORAGE.

PLAYGROUND TO ACCOMODATE VARIED AGE GROUPS, TOTS TO 5 YEARS OLD AND 5-11 YEARS OLD

PICNIC AREA, ADA ACCEESSIBLE AREAS

ROLLED GRAVEL PARKING LOT APPROXIMATELY 38 CARS

5' WIDE ADA ACCESSIBLE PAVED WALKWAY

ELECTRIC CARD ENTRY LOCKING WOOD GATE

ADA COMPLIANT CAMP SITE, 3 RUSTIC CABINS AND TOILET BUIDLING WITH ADA ACCESSIBLE RAMPS

RUSTIC CABIN CLUSTERS WITH TOILET BUILDING (TYP.) FOR BUILDING LAYOUT SEE SHEET 4 OF 4

4' WIDE WOOD CHIP WALKWAY (TYP.)

ADA ACCESSIBLE LODGE WITH RAMP

OVERFLOW PARKING AREA, APPROXIMATELY 65 CARS

ENTRANCE TO OVERFLOW PARKING

SPRUCE LAKE

BEACH DOCK WITH RUSTIC GAZEBO

ORNAMENTAL BOULDERS AT BEACH

STORAGE CABIN AT BEACH FOR BEACH UPKEEP AND LIFGUARD EQUIPMENT

BEACH PICNIC AREA

STAFF/COOK'S QUARTERS

MAINTENANCE, DELIVERY AND PARKING AREA FOR COOK AND STAFF

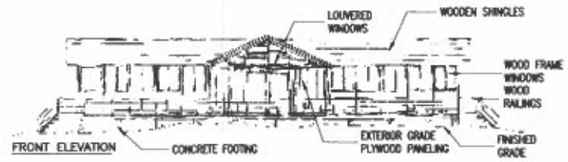
OVERFLOW PARKING, LAWN PAVERS THROUGHOUT APPROXIMATELY 25 CARS

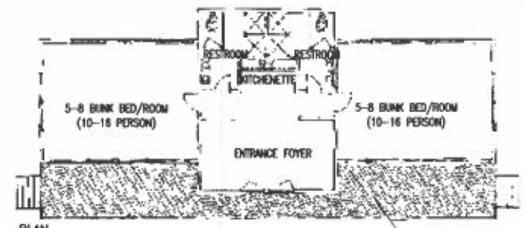
DECORATIVE PAVEMENT AT DROP-OFF FOR RUSTIC SPRUCE LODGE

PAVED PARKING AREA AT SPRUCE LODGE APPROXIMATELY 40 CARS

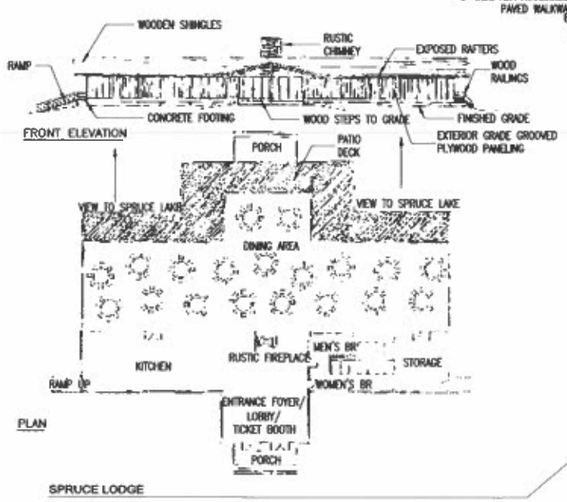
OVERFLOW PARKING, LAWN PAVERS THROUGHOUT APPROXIMATELY 25 CARS

OFFICE AT SPRUCE PARK WITH ROLLED GRAVEL PARKING AREA





LODGE



SPRUCE LODGE

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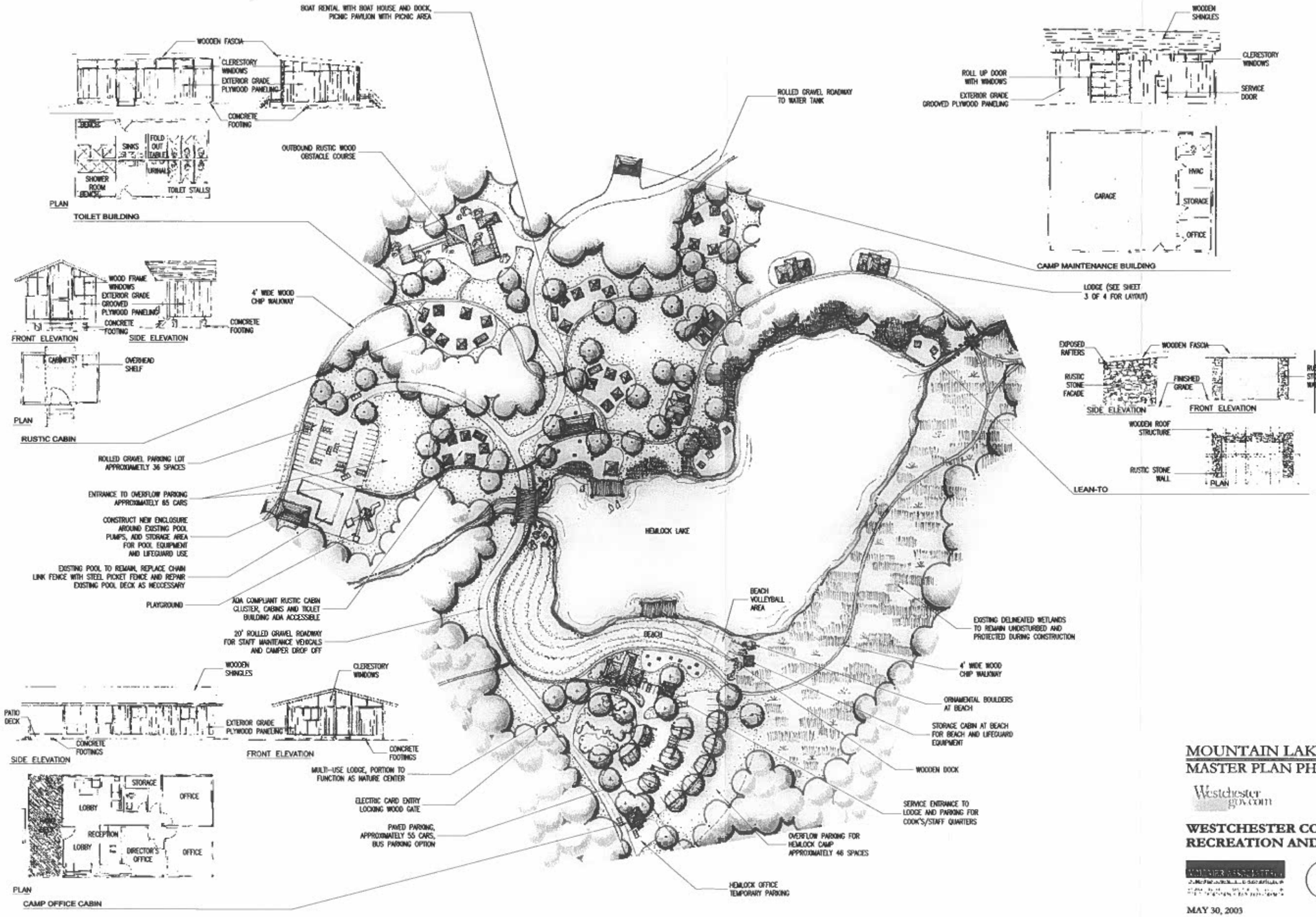

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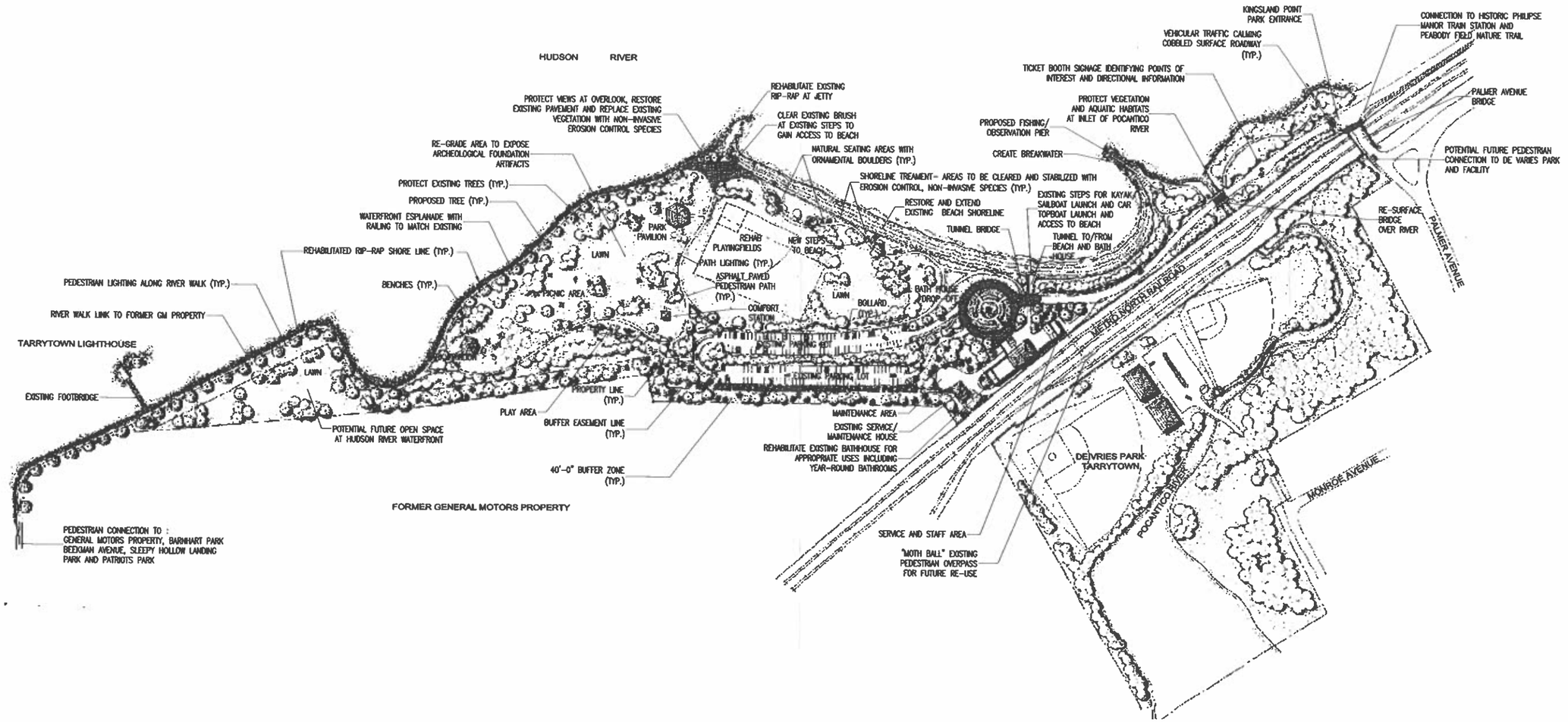
SHEET 4 OF 4

PARKS
WESTCHESTER COUNTY

KINGSLAND POINT PARK

KINGSLAND POINT PARK

PARKS
WESTCHESTER COUNTY



KINGSLAND POINT PARK
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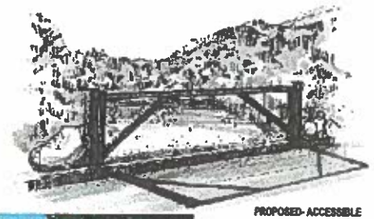
SHEET 1 OF 1

PARKS
WESTCHESTER COUNTY

SPRAIN RIDGE PARK

SPRAIN RIDGE PARK

PARKS
WESTCHESTER COUNTY



PROPOSED- ACCESSIBLE BARRIER

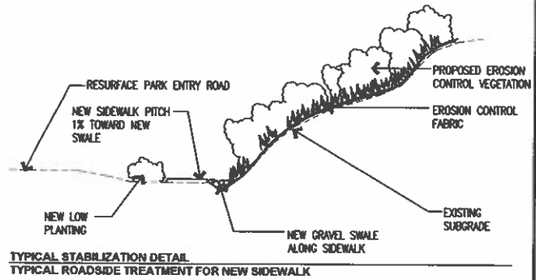
EXISTING

RIDGEHILL ACCESS CONTROL:
- COORDINATE WITH DOT AND RIDGEHILL
- INSTALL LOCKING WOOD GATE BARRIER
- INSTALL REGULATORY SIGN

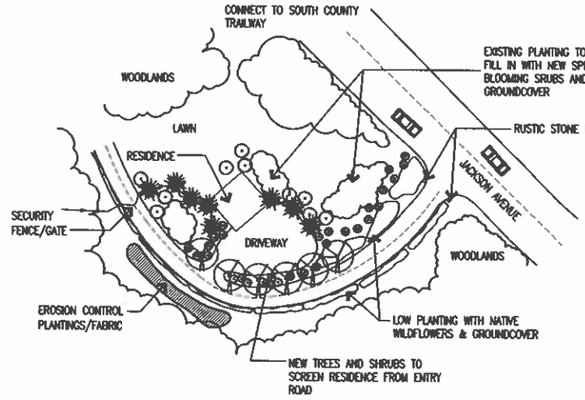
PARK SERVICE ROAD:
- REHABILITATE EXISTING ROAD
- STABILIZE ERODING SLOPE AREAS WITH EROSION CONTROL FABRIC AND PLANTINGS

TYPICAL MAINTENANCE ON TRAILS:
- CUT BACK OVERGROWN VEGETATION
- RESURFACE AND REGRADE
- INSTALL EROSION CONTROL FABRIC AND VEGETATION TO STABILIZE STEEP SLOPES

WHITE TRAIL CLASSIFICATION:
- INSTALL SIGNS FOR TRAIL CLASSIFICATION

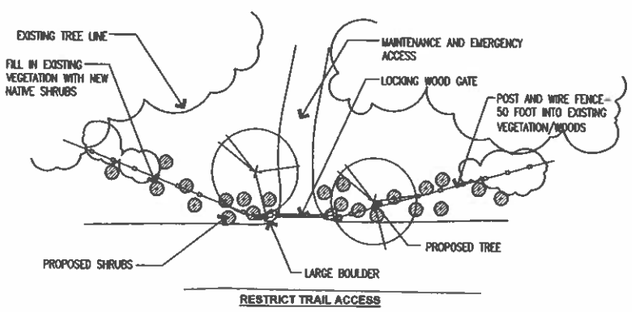


TYPICAL STABILIZATION DETAIL
TYPICAL ROADSIDE TREATMENT FOR NEW SIDEWALK



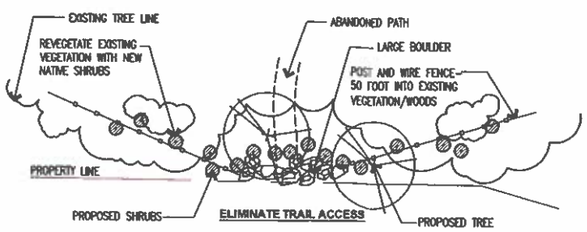
ENTRANCE PLAN ENHANCEMENTS

ELEVATION-RUSTIC PAVILION



RESTRICT TRAIL ACCESS

ACCESS CONTROL TYPE 1B



ACCESS CONTROL TYPE 1A

LEGEND
- = PROPERTY LINE
- = EXISTING TRAILS TO REMAIN
- (Y) = YELLOW BEGINNER TRAIL/PASSIVE
- (W) = WHITE INTERMEDIATE TRAIL/ACTIVE
- (R) = RED ADVANCED TRAIL/ACTIVE
- = PROPOSED TRAILS/WALKWAYS
- = PROPOSED LINKAGE
- = TRAILS TO BE ABANDONED
- = CON EDISON SERVICE ROAD
- = PARK SERVICE ROAD

TRAIL TYPE SIGNAGE

PARK DIRECTORY SIGNAGE

SIGNAGE

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SHEET 1 OF 3

SPRAIN RIDGE PARK

PARKS
WESTCHESTER COUNTY

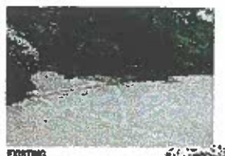
STONE BRIDGE:
- INSPECT BRIDGE STRUCTURAL CONDITION
- REHABILITATE STONE ARCH

PROPOSED ACCESS CONTROL TYPE 1A:
- LARGE BOULDERS
- REVEGETATE SURROUNDING AREAS

UPPER PICNIC AREA:
- CONSTRUCT CONCRETE PADS FOR PICNIC TABLES
- INSTALL NEW GRILLS AND TRASH RECEPTACLES
- INSTALL NEW DRINKING FOUNTAINS
- INSTALL NEW PLAY EQUIPMENT
- RESTORE COMFORT STATION
- CONSTRUCT PICNIC PAVILION (SEE ELEVATION)

TRAIL FROM UPPER AREAS TO POOL AND CONCESSION:
- REHABILITATE EXISTING TRAIL FROM UPPER PARKING LOT TO CONCESSION AND POOLS
- INSTALL EROSION CONTROL FABRIC AND NEW PLANTING
- REGRADE AND RESURFACE TRAIL
- INSTALL SIGNS

RED TRAIL CLASSIFICATION:
- INSTALL SIGNS FOR TRAIL CLASSIFICATION



EXISTING

POOL PARKING PEDESTRIAN ACCESS:
- CONSTRUCT PEDESTRIAN CROSSWALKS WITH DROP CURBS IN PARKING AREA
- CONSTRUCT SIDEWALK ALONG SOUTH EDGE OF PARKING AREA

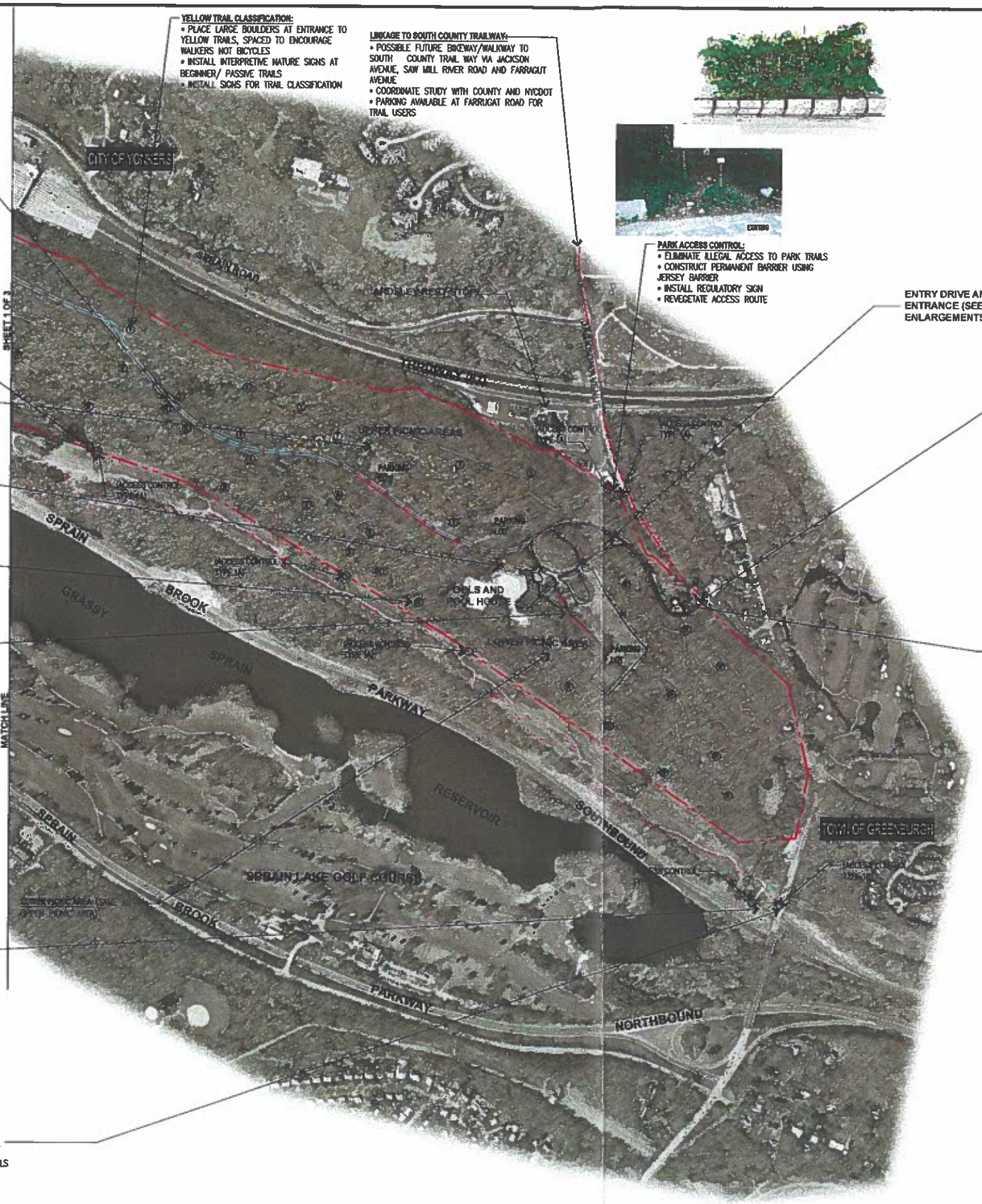
PROPOSED- CROSSWALK TREAMENT AND SIDEWALK

EXISTING

PROPOSED- REMOVABLE BARRIER

EXISTING

CON EDISON RIGHT OF WAY ACCESS CONTROL:
- COORDINATE WITH CON EDISON
- ELIMINATE ILLEGAL ACCESS TO PARK TRAILS
- INSTALL LOCKING WOOD GATE BARRIER
- INSTALL REGULATORY SIGN



YELLOW TRAIL CLASSIFICATION:
- PLACE LARGE BOULDERS AT ENTRANCE TO YELLOW TRAILS, SPACED TO ENCOURAGE WALKERS NOT BICYCLES
- INSTALL INTERPRETIVE NATURE SIGNS AT BEGINNER/ PASSIVE TRAILS
- INSTALL SIGNS FOR TRAIL CLASSIFICATION

LINKAGE TO SOUTH COUNTY TRAILWAY:
- POSSIBLE FUTURE BIKEWAY/WALKWAY TO SOUTH COUNTY TRAIL WAY VIA JACKSON AVENUE, SAW MILL RIVER ROAD AND FARRAGUT AVENUE
- COORDINATE STUDY WITH COUNTY AND NYCDOT
- PARKING AVAILABLE AT FARRUGAT ROAD FOR TRAIL USERS

PARK ACCESS CONTROL:
- ELIMINATE ILLEGAL ACCESS TO PARK TRAILS
- CONSTRUCT PERMANENT BARRIER USING JERSEY BARRIER
- INSTALL REGULATORY SIGN
- REVEGETATE ACCESS ROUTE

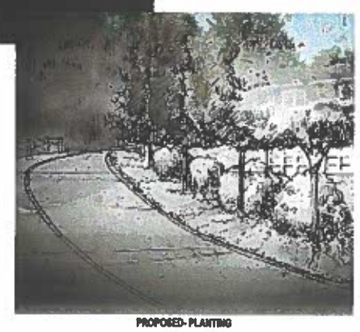
ENTRY DRIVE AND ENTRANCE (SEE ENLARGEMENTS)

PROPOSED- ENTRANCE PIERS

EXISTING

PARK ENTRANCE:
- SCREEN CARETAKERS RESIDENCE FROM ENTRANCE ROAD
- ENHANCE SENSE OF ARRIVAL WITH STONE ENTRY PIERS
- CONTROL OFF HOUR ACCESS, LOCK AND SECURE EXISTING FENCE
- REHABILITATE MAIN PARKING AREA AND PARK ROAD PAVEMENTS

EXISTING



PROPOSED- PLANTING

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SPRAIN RIDGE PARK

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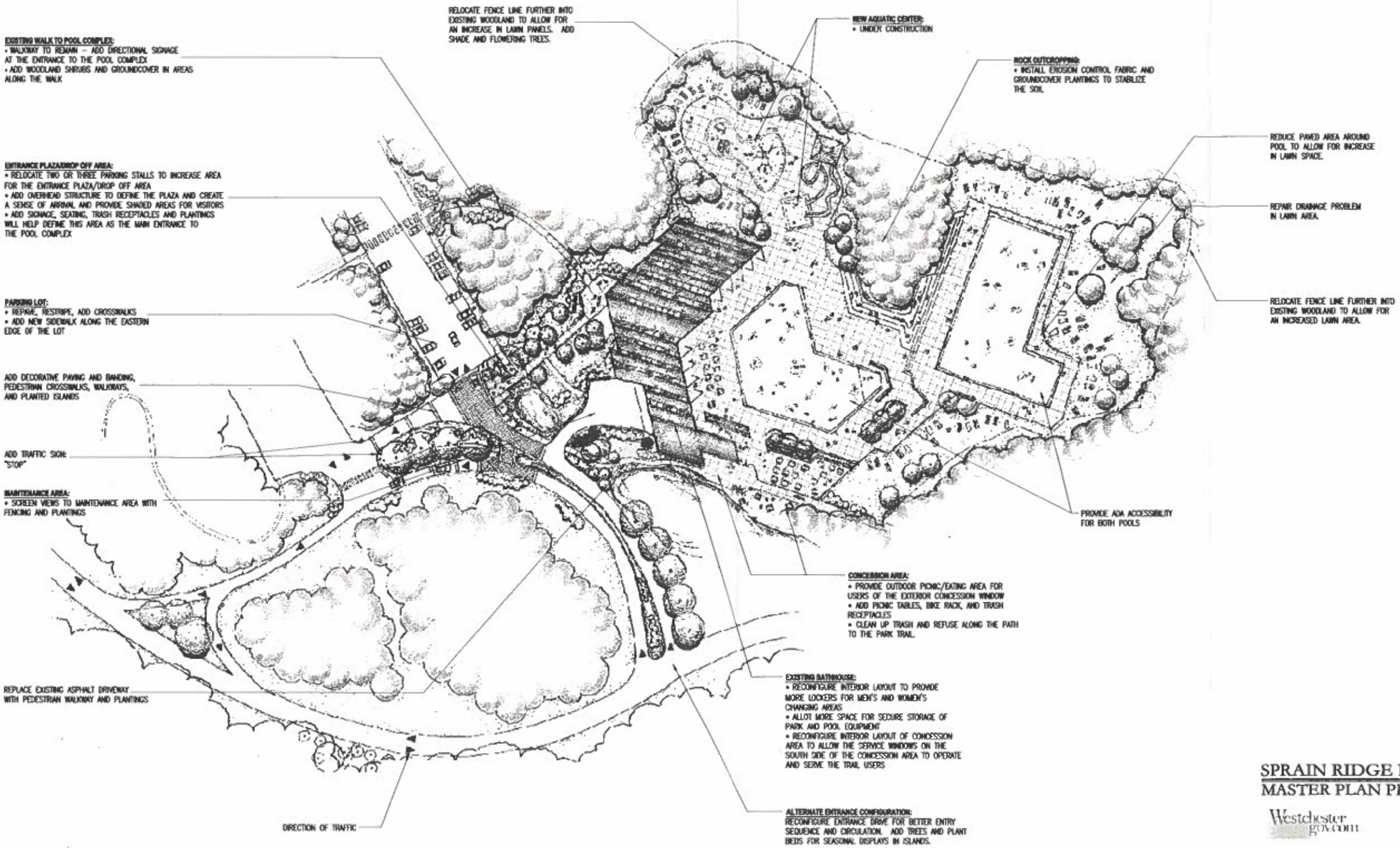

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