

**METROPOLITAN
DISTRICT
COMMISSION**



**ANNUAL
REPORT**

FISCAL YEAR
Ending
JUNE 30, 1977

DISTRICT MEMBERSHIP

	Water	Parks	Sewerage		Water	Parks	Sewerage
Arlington	x	x	x	Revere	x	x	x
Ashland			x	Saugus	x	x	
Belmont	x	x	x	Somerville	x	x	x
*Bedford			x	Stoneham	x	x	x
Boston	x	x	x	Stoughton			x
Braintree		x	x	Swampscott	x	x	
Brookline	x	x	x	Wakefield	x	x	x
Burlington			x	Walpole			x
Cambridge	x	x	x	Waltham	x	x	x
Canton	x	x	x	Watertown	x	x	x
Chelsea	x	x	x	**Wellesley	x	x	x
Cohasset		x		Weston	x	x	
Dedham		x	x	Westwood		x	x
Dover		x		Weymouth		x	x
Everett	x	x	x	Wilmington			x
Framingham			x	Winchester	x	x	x
Hingham		x	x	Winthrop	x	x	x
*Holbrook			x	**Woburn	x		x
Hull		x					
Lexington	x		x	Totals	<u>34</u>	<u>37</u>	<u>43</u>
Lynn		x					
Lynnfield Water Dist.	x						
Malden	x	x	x				
Marblehead	x						
Medford	x	x	x				
Melrose	x	x	x				
Milton	x	x	x				
Nahant	x	x					
Natick			x				
Needham	x	x	x				
Newton	x	x	x	Membership			
Norwood	x		x	3 Districts	24		
Peabody	x			2 Districts	12		
Quincy	x	x	x	1 District	<u>18</u>		
Randolph			x		54		
Reading			x				

(Beyond the Water District the MDC furnishes the entire water supply for Chicopee, South Hadley Fire District No. 1 and Wilbraham, a partial supply to Clinton, Framingham, Leominster, Marlboro, Northboro and Southboro and an emergency standby connection for Worcester.)

*Bedford joined the Sewerage District in June, 1970, with sewage for part of the town handled through the town of Lexington under special contract. Holbrook became a member of Sewerage District in January, 1971, but is not contributing sewage to the system.

**Woburn was admitted to Water District in August, 1972, and Wellesley in March, 1974, but neither is being supplied pending completion of connections.

MICHAEL S. DUKAKIS
Governor

EVELYN F. MURPHY
Secretary of Environmental Affairs

JOHN F. SNEDEKER
Commissioner

Associate Commissioners
ANITA B. BANKS
PETER D. CORBETT
MARIANNA D. HANNIGAN
CONCHITA F. RODRIGUEZ

JOHN A. KESSLER, JR.
Secretary of the Commission

MARTIN F. COSGROVE
Chief Engineer

Executive Assistant
JOHN J. BEADES

JOHN WRIGHT
General Counsel

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OFFICIALS

GERARD F. ALLEN
Supervisor of Personnel Management

FRANCIS T. BERGIN
Chief Construction Engineer
Engineering Division

LAURENCE J. CARPENTER
Superintendent of Police

JEREMIAH A. FALVEY, JR.
Director of Right of Way Division

ALFRED F. FERULLO
Director of Environmental Quality

MICHAEL A. GOLDMAN
Director of Public Information

ALLISON G. HAYES
Director of Sewerage Division
Chief Sewerage Engineer

WILLIAM T. KENNEY
Director of Central Services

JAMES J. MATERA
Director of Water Division
Chief Water Supply Engineer

JULIA B. O'BRIEN
Director of Land Planning

MARTIN WEISS
Director of Environmental Planning

ROBERT B. WILLIAMS
Director of Parks and Recreation

(Incumbents as of 6/30/77)



The Commonwealth of Massachusetts

Metropolitan District Commission

20 Somerset Street, Boston 02108

To His Excellency the Governor and the Secretary of Environmental Affairs:
To the Honorable Senate and House of Representatives:
To the Honorable Mayors, Selectmen and Municipal Officials:
To the Public of the Metropolitan Parks, Sewer and Water Districts:

The Metropolitan District Commission submits herewith a report on activities and other pertinent data for the fiscal year ending June 30, 1977, in accordance with the provisions of Section 100, Chapter 92 of the General Laws.

This document is designed to provide a broad overview of MDC's accomplishments during fiscal 1977 and plans for the near future in providing vital regional services for nearly 2.5 million inhabitants of 54 cities and towns.

It has been a year of substantial progress in fulfilling MDC objectives in our Parks, Sewerage and Water Districts. Great strides have been made in expanding and improving the parks system's facilities, acquisition of much-needed open space and developing recreation programs. More intensive pollution control has been achieved through major ongoing projects, while groundwork is being laid for an \$855 million clean waters program for Boston Harbor and the Charles and Neponset rivers — the biggest undertaking in MDC history. A solution for our tight water supply problems is being actively pursued and preparations are progressing toward fluoridation of the system in 1978. Our police force has dealt firmly and effectively with a critical challenge of the right of all races to use an MDC beach in South Boston during a two-week period of confrontations. Upgrading police professional standards has continued through new training methods and psychological testing of applicants. During fiscal 1977 there has been a reduction in MDC debt, while maintenance and operating costs have increased moderately.

A notable advance in upgrading MDC personnel efficiency has been initiated through a new process for evaluating work performance, attendance and other employment standards and computerizing the results. Plans call also for in-service training of supervisory employees to sharpen management capability.

I am hopeful that this report will bring greater understanding of MDC's efforts to satisfy basic needs, meet environmental goals and enhance the quality of urban life efficiently and economically.

Respectfully submitted,

A handwritten signature in cursive script that reads "John F. Snedeker".

John F. Snedeker
Commissioner

Highlights of the Year's Activity

Progress toward large-scale park development and significant open space acquisition highlighted activities of the Metropolitan District Commission during the fiscal year ending June 30, 1977.

In other major developments, preparations moved ahead on a huge clean waters program for Boston Harbor and the Charles and Neponset rivers and steps were taken to resolve controversy over augmenting MDC's inadequate water supply by limited diversion of Connecticut River flood flow to Quabbin Reservoir.

In an outstanding addition to MDC's parks system, the first phase of a new 200-acre Mystic River Park will be ready for public enjoyment next spring. Work begins next year on the scenic one-mile oceanfront park and rejuvenation of Revere Beach, a 4 1/2-acre park on the Charles River in Waltham and an urban park at Chestnut Hill Reservoir in Brighton. Within the next year, it is expected that work will be underway on the new Franklin Park Zoo and the Metropolitan Arena and Recreation Center, incorporating an indoor high school track, skating rink and a park on the Neponset River shoreline in Dorchester. A large-scale renovation and development program is nearly complete at Stony Brook Reservation in the West Roxbury-Hyde Park section of Boston, climaxed next year by a unique park and shelter for the handicapped. In the Blue Hills Reservation, Trailside Museum's new auditorium-classroom building has been dedicated and a major project to restore natural areas at Houghton's Pond will soon be underway. Entering its final stages is the 25-mile bikeway system running on both shorelines of the Charles River between Boston and Watertown. Virtually completed is first phase restoration of historic Fort Independence at Castle Island, South Boston.

Open space acquisition has been highlighted by a 70-acre gift in the Blue Hills, a five-acre site for development of John Fitzgerald Kennedy Park on Memorial Drive, a 4 1/2-acre area for the Waltham riverside park and various parcels of Revere Beach's amusement strip for the new park. Prospects are bright, also, for a takeover of 26 acres at the former Chelsea Naval Hospital property on the lower Mystic River and 135 acres of saltmarsh in East Boston to supplement a recently-acquired 28-acre tract for a new Belle Isle Reservation.

Groundwork is being laid for implementing the pollution control program for Boston Harbor and the Charles and Neponset rivers as recommended by a three-year inter-agency study of wastewater management in the Boston Harbor-Eastern Massachusetts Metropolitan Area (EMMA). The \$855 million program, financed by Federal, State and MDC funds, launches a new era in pollution control and also satisfies rigid Federal requirements. Its major provisions call for upgrading processing at MDC's two treatment plants from primary to secondary treatment, abatement of combined stormwater-sewage overflows and eliminating sludge discharge into the harbor. Already well underway is an important construction project in Charles River's lower basin providing for a storm

detention-chlorination facility, a pumping station and major interceptor conduits. Treated combined overflows will be discharged to tidewater below the new Charles River Dam presently nearing completion one-half mile below the existing dam. A destratification system will be operative next year to eliminate the salt water strata on the river basin bottom which has stifled fish and plant life.

MDC's tight water supply continues to cause great concern, resulting in a policy decision temporarily closing the door to water-short communities seeking Water District membership until an additional source is obtained. The controversial 10-year-old plan for limited diversion of Connecticut River flood flow to Quabbin Reservoir now awaits completion of an environmental impact statement and a review of other options. These requirements were recently set by the State Executive Office of Environmental Affairs (OEA) with a provision for representation from the Connecticut River Valley in Massachusetts and Connecticut on a citizens advisory committee, as well as Metropolitan Boston interests. Meanwhile, OEA's 1977 State Water Policy Study report has recommended that MDC push its program of water conservation and urged that district members locate and remedy sources of water loss from leakage in local systems. In another aspect of MDC's water supply system, fluoridation as a dental health measure is planned for early next year, as required by legislation upon approval by a majority of Water District members.

A racial crisis at South Boston's Carson Beach brought a major test of the principle that all people are privileged to enjoy a public beach. This right was firmly established through firm measures by Metropolitan District Police and MDC officials during two weeks of confrontations and tension. After a period of uncertainty, the continuing role of MDC Police as a separate force has been assured following rejection by Governor Dukakis of a management task force's recommendation calling for shifting its functions to other law enforcement agencies. Authorization was later granted to bolster manpower which had diminished by approximately 150 men during a job freeze. At the same time, a new detachment has been stationed at Clinton for protection of Wachusett Reservoir and watershed areas in Central Massachusetts. At the Police Academy, a number of new techniques have been adopted to sharpen police operations, such as defensive driving, cardio-pulmonary resuscitation and other "first responder" medical skills.

The Metropolitan District Commission now provides services to 54 cities and towns in Metropolitan Boston with a total population of 2,431,968. MDC membership consists of 43 communities with 2,180,074 residents in the Sewerage District, 34 cities and towns and 1,836,240 residents in the Water District and 37 municipalities with 1,984,940 population in the Parks District. Twenty-four municipalities are members of all three districts, 12 are served by two districts and 18 by one district.



John Gustavsen

A Big Year for Parks, Open Space Progress

Widespread park development and substantial open space acquisition were in progress in the Metropolitan Parks District during the past year.

The extensive expansion of recreation opportunities was highlighted by a new 200-acre park reservation on the Mystic River Basin due for first-phase completion in the spring of 1978 and preparations for a construction start next year on a one-mile oceanfront park and rejuvenation of Revere Beach.

On the Charles River shoreline a one-mile link in the projected 25-mile bikeway system was opened to bicyclists and joggers and an additional 4 1/2-mile section will be underway in a few months, virtually completing the Boston-Watertown bicycling network. Improvements at Herter Park Center are progressing, along with initial planning for restoration of the adjoining outdoor summer theater. Upriver, work is scheduled next spring on a riverside park in Waltham.

A large-scale renovation and development program at the 470-acre Stony Brook Reservation in the West Roxbury-Hyde Park section is in its final stages, culminating next year in an innovative park and shelter for handicapped children.

In the Blue Hills Reservation, Trailside Museum's new auditorium-classroom building has been dedicated and an important upgrading project to restore natural areas at Houghton's Pond is ready to go shortly.

A number of shoreline facilities have been finished or in prospect on the South Shore, particularly along Wollaston Beach, where improvements will be capped next year by a multi-service beach management structure and mini-park.

Optimism has developed for initiating preliminary site work in 1978 for the long-delayed indoor high school track, skating rink and shoreline park on the Neponset River in Dorchester, as well as a start on the new Franklin Park Zoo.

Important open space acquisitions have already been

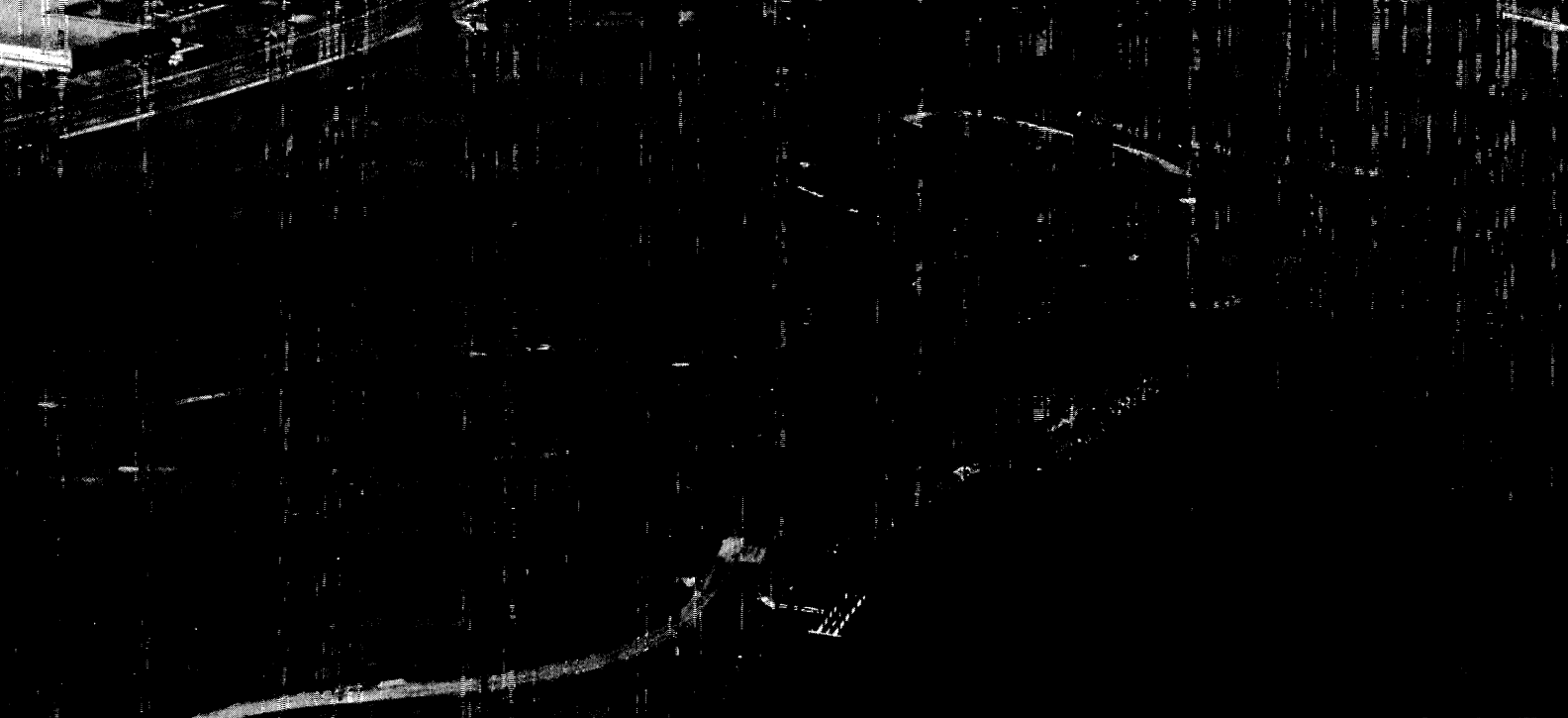
consummated or in prospect. Among the new land holdings are the gift of a 70-acre addition to Blue Hills Reservation, a five-acre site on Memorial Drive for development of John Fitzgerald Kennedy Park, assembling of a 4 1/2-acre tract for the projected Landry Park on Charles River in Waltham and a number of parcels for park development at Revere Beach. Under consideration is a takeover of 26 acres for a waterfront park at the former site of Chelsea Naval Hospital, overlooking the lower Mystic River. Negotiations with Massport have begun for transfer of 135 acres of saltmarsh to supplement 28 acres acquired at the adjoining former Suffolk Downs drive-in theater in East Boston for developing the new Belle Isle Reservation.

New Mystic Park Opening in 1978

Transformation of an estuary wasteland along the Mystic River Basin into a 200-acre scenic panorama of park, marine and recreation facilities is progressing toward completion of its major first stage by the spring of 1978.

Described as MDC's most exciting open space project in many years, the initial \$3.2 million phase covers 100 acres in Somerville and Medford bordering a 525-acre fresh water basin converted from unsightly, odorous salt water tidal flats and swamp grass by activation of the new Amelia Earhart Dam in 1966. An extensive soil reconditioning program was required for proper plant growth, because much of the land consisted of salt-laden silt.

The first-phase development features parkland for passive recreation, an island wildlife sanctuary, a wetland wildlife conservation area and planting of 5000 trees and shrubs. Facilities will include a fishing pier, five miles of bicycle paths, walkways, benches, picnic tables, a lookout tower, pedestrian bridge, boat launch and parking areas. An up-river segment,



NEW MYSTIC RIVER PARK is nearing first stage completion of a 200-acre reclamation and development project providing a panorama of park, marine and recreation facilities, shown in part. Photo on left page shows a portion of the original tract, consisting of tidal flats, swamp grass and brush.

adjacent to the Formel Stadium sports complex, will contain four tennis courts and Little League and soccer fields. A sailing pavilion and dock were completed in 1974 on the Somerville shore, near Route 93, along with an adjacent park.

Further improvements will be undertaken in 1978 under a \$500,000 contract. These will provide lighting for roadways, parking areas and the tennis courts, upgrading a section behind the Middlesex Fells police station, constructing a police boat dock and dredging an access channel.

Plans for the next stage call for development of park land on the west shore of the Malden River from its confluence with the Mystic, a boat launch and extension of first-phase bicycle and foot paths. Another project provides for a park and fishing pier on a small peninsula alongside Route 93 in Somerville.

Easily accessible to the heavily-populated area north of Boston, the park reservation is located near Route 93 expressway, the Fellsway, Veterans Memorial Parkway (Route 16) and MBTA's Wellington rapid transit station.

Revere Beach Park Due to Start

In another massive project also serving the Parks District's northern area, groundwork is well advanced for a construction start next year on a one-mile beachfront park and rejuvenation of the Revere Beach Reservation.

The program is an outgrowth of a major joint redevelopment plan in the beach area incorporating a private housing development set back a block from the beach, westerly of

Jack Maley, MDC



Kevin O'Malley, MDC

Ocean Avenue, a nearby 1000-car garage at the Wonderland MBTA station and a new connector highway from Cutler Circle, near Northeast Expressway, Revere.

Under legislation authorizing an initial \$5 million expenditure and acquisition of the deteriorated amusement strip, a master plan is being prepared for a landscaped park between Ocean Avenue and Revere Beach Boulevard, walkways, replenishing the beach sand and protection against erosion and storm damage. MDC planners have been working closely with the housing developer and state and Revere agencies to safeguard and enhance public enjoyment of the popular recreation asset acquired in 1895 as the first publicly-owned beach in the country.

An agreement has been signed for exchange of an MDC

Fireworks and Crowd on 4th Too Much for Hatch Shell

The music was stirring, the fireworks spectacular and a massive 300,000 audience on hand, but the 1977 July 4th celebration at Hatch Shell lacked much of the 1976 Bicentennial flavor of patriotism and good will.

Echoes of holiday excitement had hardly died away when unruly incidents marring the event stirred reverberations that cast doubt about any future fireworks display as a highlight of the Esplanade program — the primary attraction for a big percentage of the audience.

In only four years, unique features of the celebration had skyrocketed attendance from a comfortable 75,000 to an unwieldy 400,000 for the 1976 Bicentennial observance. Throngs reached wall to wall proportions on both banks of the Charles River Basin, roadways, rooftops and from a flotilla of boats, but the festivities — a nationally-televised Bicentennial spectacle — were remarkably free of incidents. "A moment in history" was one description of the event.

The magnet was Boston Symphony's Pops concert of patriotic selections conducted by Arthur Fiedler, highlighted by the unique presentation of Tchaikovsky's 1812 Overture, punctuated by firing of 105 mm howitzers and accompanied by amplified bell ringers and church bells coordinated with fireworks. And the finale was a mammoth fireworks display from river barges.

But in 1977, pockets of boisterous, disorderly behavior sprung up, reaching from the Esplanade into Back Bay and Beacon Hill streets. Hard-pressed MDC Police coped with incidents that piled up 27 arrests, 39 persons requiring hospital treatment and 138 suffering minor

injuries. In the aftermath, one man died in a hit and run accident and another drowned at the nearby Charles River boat locks. Property damage in the area was considerable and trash was a formidable problem.

One newspaper observer described the four-year transit on as "both a tradition and a tragedy."

Within hours, voices were raised, calling for scaling down the holiday program by eliminating the climactic fireworks display, but retaining fireworks related to the 1812 Overture. Opinions were expressed that disturbances emanated from a big segment of the audience drawn solely by the fireworks exhibition and arguing that such displays should be supplied at the community level. Too large a crowd for the Esplanade's capacity was another commonly-held viewpoint.

For 1978 the climactic fireworks may be abandoned and the program geared to music-lovers, especially in deference to Arthur Fiedler's 50th anniversary as conductor of the Esplanade Pops concerts.

Another significant policy decision has already been reached — barring rock concerts at Hatch Shell. This came in the wake of a "Spring Fever" music festival on April 30 sponsored by a Boston radio station, which unexpectedly attracted 150,000 and left behind a mammoth trash problem, a score of arrests, many injuries and a nuisance in neighboring streets.

In general, Hatch Shell was again a prime entertainment magnet, drawing 607,000 for 30 events ranging from a variety of musical performances to the Boston Ballet company and modern and contemporary dance performances.

inland parking area off Ocean Avenue for beachfront property previously acquired by the housing developer. Together with additional parcels to be taken by eminent domain, the exchange clears the way for the park site and provides for a setback of apartment towers far enough to minimize casting shadows on the beach.

Ground-breaking is scheduled for early next summer on a 770-foot first phase park development in the vicinity of Shirley Avenue and Beach Street, preceded by contracts for demolition-landfill work and loaming and seeding in various areas. Rehabilitation of the beach police station and renovation of the band-stand and pavilions are also expected to be underway during 1978.

About 1½ miles south of Revere Beach, preparations are proceeding for developing a proposed 200-acre Belle Isle Reservation near Constitution Beach, East Boston, following acquisition of the 28-acre, former Suffolk Downs drive-in theater. The concept provides for a passive park containing open space for informal play, tree planting, park benches, picnic locations, walkways, bicycle path and a fishing pier. Opening an existing closed channel to Belle Isle Creek and cutting a

second channel will allow tidal flushing and preservation of the salt water marsh and also create an island with connecting bridges. A transfer of 135 acres of the Belle Isle saltmarsh by Massport has been requested for expanding the reservation.

Under consideration is an additional 26-acre waterfront park overlooking the lower Mystic River on the former site of Chelsea Naval Hospital, just upstream from the Tobin Bridge. MDC has expressed interest in the park proposal in conjunction with the City of Chelsea's plan to acquire the 80-acre Federal property for residential and industrial development, community recreation facilities and preservation of certain historical buildings.

Charles River Development

Along the scenic Charles River Basin, MDC is expanding opportunities for recreation and relaxation in a continuous program of beautification, development and acquisition of riverside open space.

The projected 25-mile bikeway system on both shores of the Charles between Boston and Watertown is nearing completion and already widely used by recreation-minded and



Jack Maley, MDC

INDEPENDENCE DAY CELEBRATION at Hatch Shell on the Charles River Esplanade was packed at every vantage point on July 4th by 300,000 people for the Pops concert conducted by Arthur Fiedler and a massive fireworks display.

commuting bicyclists and also joggers. A newly-finished \$301,904 section has extended the Esplanade bikeway one mile along Soldiers Field Road, Boston, between B.U. and River Street bridges, equipped with overlooks, benches and landscaping. An interesting aspect is a wooden bridge swung out over the river on pilings beneath B.U. Bridge as a link to existing paths on the Esplanade. Missing links and improvements on the north side of the Charles between Boston and Watertown were completed previously. Work on the next \$516,000 phase will begin in the fall of 1977, to improve 4 1/2 miles of the Esplanade bike system between the Museum of Science and B.U. Bridge. Under this contract 10 new emergency police phones will line the route, supplementing six existing phones being moved for better coverage, along with ramps, benches, picnic tables, drinking fountains, fences, signs and various safety features. The network's final link will be the Boston stretch from River Street Bridge to Watertown Square.

Creation of a new beauty spot on the Cambridge side of the Charles River is in its preliminary stage, following legislation conveying a five-acre site to MDC for development of John Fitzgerald Kennedy Park for passive recreation. The parcel is part of state-donated land originally intended for the

Kennedy Library, later shifted to the University of Massachusetts-Boston campus. Preliminary work such as landfilling, loaming and seeding will be underway in 1978 for a fitting memorial to the late President located at Memorial Drive and Boylston Street, adjacent to the projected Kennedy School of Government and Institute of Politics being built by Harvard University. Funding for the park and its maintenance will come from the sale of portions of the original tract to Harvard and a private developer.

On the Boston riverfront off Soldiers Field Road, Brighton, extensive structural renovations are proceeding at Herter Park Center, formerly Metropolitan Boston Arts Center (MeEac). Design work is scheduled for next year on restoring the adjoining outdoor summer theater where the Publick Theater has been offering performances for the past seven years. A new stage, seating for 400 persons and tree-planting will be among the planned improvements. The Herter Center will also be the scene of a solar energy installation as an educational demonstration and heating supply financed by a \$97,000 Federal grant. The Center, named in honor of the late Massachusetts Governor and U.S. Secretary of State, has been designated for environmental, cultural, recreational and educational uses. Among its activities have been urban gardening

Takeover of Skating Rinks Proposed to Municipalities

Discussions have been initiated with communities in the Parks District for a takeover of MDC's 26 skating rinks, with one long-term agreement already negotiated with the town of Arlington to operate the local rink.

The divestiture proposal followed a conclusion that rinks spread through Boston and 13 other cities and towns have become largely local in usage rather than regional and that they might be more appropriately operated by municipalities. By integrating rinks with year-round municipal recreation programs and with moderate rental and admission fee increases, financial projections indicate that rinks may be run at a break-even point by local management in contrast to MDC's deficit operation. Under the divestiture plan, municipalities are being offered a 25-year lease at \$1 per year and MDC assumption of major repairs during the first five years.

A \$3.8 million rink improvement program is in process, including fully enclosing and major changes at three open-sided rinks in Milton, Cleveland Circle in Boston and Everett and replacement of the old Devine rink in Dorchester. The conversions will leave only seven open-sided rinks in the system. Extensive improvements are also underway at rinks in South Boston, East Boston and Arlington.

demonstrations, ethnic cultural events, a music and theater performing arts series and various exhibits.

Upriver, another sightly riverside park development will be under construction next spring adjacent to Moody Street Dam in Waltham on a 4 1/2-acre site including 2.2 acres of riverbed, acquired through eminent domain and use of a city-owned tract. The \$478,000 project calls for a passive recreation area with walkways, benches, tree planting, landscaping and a lighting system. Other features are an 80-foot pedestrian bridge and a fish ladder at the dam for upstream migration of spawning fish. The acquisition and development are in line with MDC policy to acquire available shorefront for conversion to green park space, a program strongly supported by the late Representative Richard E. Landry of Waltham for whom the park will be named.

Design work is slated to begin in 1978 on restoration of a 15-acre passive recreation area at the old Riverside Park in the Newton-Weston section, featuring a canoe launch, picnicking, benches, planting and renovation of two pedestrian bridges and an existing structure for office purposes.

Urban Park at Chestnut Hill

In a few months, construction will be underway on a \$2.2 million urban park at MDC's Chestnut Hill Reservoir grounds.

The new facility is an outgrowth of a controversy over pollution effects of encroachment within the fenced shoreline by joggers, picnickers, swimmers and dogs which resulted in barring the public from the distribution reservoir grounds in Brighton.

Jogging in the scenic area will be restored on a 1.6-mile jogging path behind a relocated fence installed to protect the water supply from people using the park. The project also provides for wooden benches, drinking fountains, a new playground near MDC's Cleveland Circle skating rink, bike paths, landscaping and upgrading the roadway drainage system to prevent runoff from entering the reservoir. Two roadways within 17 1/2 acres transferred from the City of Boston will be reconstructed.

Stony Brook Reservation Projects

An extensive \$2.8 million renovation and development program has moved into its final stages at the 470-acre Stony Brook Reservation in the thickly-settled West Roxbury-Hyde Park section of Boston. The improvements provide a wide variety of athletic, park and active and passive recreation facilities and specially-designed areas for handicapped children and for the elderly.

Work is scheduled to start in a few months on the innovative John F. Thompson Memorial Park and a shelter designed for handicapped children. This concluding \$600,000 phase will consist of a central structure, woodlands, nature trails with descriptive environmental exhibits in Braille, play and picnic areas and outdoor classroom.

Other facilities already installed or nearing completion include two fishing piers at Turtle Pond, picnic grounds, improvement and expansion of the hiking and bicycle path system, three lighted tennis courts, play equipment, a new River Street athletic field and bleachers, planting of 1210 trees and parking areas. For the elderly an overlook park was designed as a viewing area, equipped with benches and game tables and a gazebo surrounded by a moat. The reservation will be serviced by a \$344,360 park maintenance facility due for late-1977 completion.

Newly-available for the 1976 summer season was the major \$167,910 upgrading of a nearby five-acre park embracing Francis D. Martini Music Shell on Truman Highway, Hyde Park, emphasizing restoration of the natural environment. The project provided for floodlighting, a natural grass amphitheatre, extensive tree and shrub planting, relocation of two lighted tennis courts, a lighted basketball court, a new picnic area and lighting standards.

In another Hyde Park program, a \$476,774 renovation is underway at Colella, Moynihan and Camp Meigs playgrounds and also DeSantis Park where a natural area is being enhanced by walkways and benches. Work at the playgrounds includes Little League fields, four tennis courts, a wading pool, replacement of play equipment and trees and shrubs.

Blue Hills Improvements

A big boost for enlarging and enhancing the 5,700-acre Blue Hills Reservation occurred during the year through a gen-



STONY BROOK RESERVATION is undergoing a large-scale renovation and development program, now in its final stages. Shown are three types of facilities installed at the 470-acre reservation.



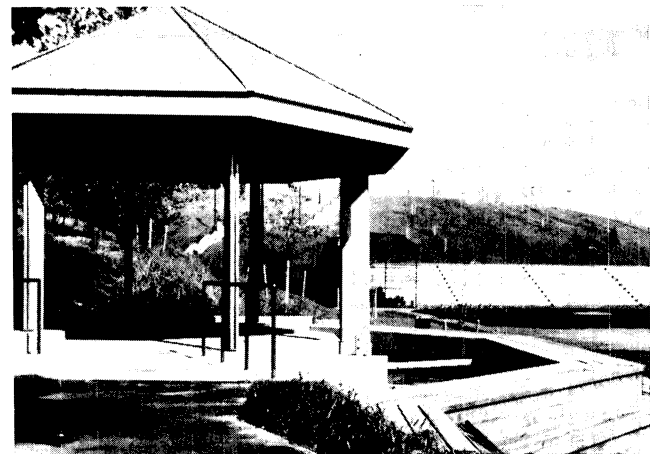
erous gift of the 70-acre Brookwood Farm valued variously from \$1 million to \$2.5 million. The benefactor, Henry Saltonstall Howe, donated an estate consisting of a 10-room mansion, farm buildings, three ponds and woodlands located in Milton and Canton, adjacent to the reservation. Rather than allow residential or commercial development, Mr. Howe said transfer of the property to MDC would assure its remaining in a natural state. While retaining the privilege of residing at Brookwood during his lifetime, he offered to relinquish the home if the Commonwealth desired to utilize it as an official Governor's residence.

Blue Hills Reservation was further enhanced by completion of a \$295,433 auditorium-classroom at the popular Trailside Museum to accommodate natural history educational programs and an exhibit construction and storage area. The barn-style structure is an addition to the museum's original Dutch colonial farmhouse used for exhibits and a visitors center. Work will be underway in 1978 on a \$150,000 contract for landscaping and other improvements of parking lots, grounds and the animal exhibit area.

In the Blue Hills area, also, a \$365,000 project will begin in a few months to upgrade the heavily-used Houghton's Pond facilities. Aimed at restoring its natural beauty, plans call for improvements to worn and eroded areas, relocation and redesign of access road and parking spaces, overhauling and blending of equipment with the natural area, new play equipment and informal plantings.

Schoolboy Track Outlook Brightens

The outlook for clearing a 12-year obstacle course now appears promising for an indoor high school track serving the Parks District, designed as the centerpiece of a 70.7-acre, \$7 million park and recreation center on the Neponset River shoreline in Dorchester, near Southeast Expressway.



Plans for modifying structural design to bring costs into line with available funds have opened the way to proceed with site preparation in 1978.

Latest construction delay developed last year when the lowest bid of \$6.5 million for the track, ice hockey forum, entrance-service building and associated facilities indicated that the entire complex would exceed authorized funds by \$1.4 million. Attempts to obtain additional funds or delete the hockey forum mandated by legislation were unsuccessful, leading to a decision for scaling down the size of structures, seating capacity and outdoor aspects of the project. The need for a hockey forum has been considered questionable since the nearby Devine rink is scheduled for a \$1.4 million, fully-enclosed replacement next year.

The first phase planned for next year will consist of site preparation, utilities, roadways and parking. Six months later, a construction start is scheduled for the multi-use track structure, entrance-service and rink buildings and outdoor facilities.



Jack Maley, MDC

AUDITORIUM-CLASSROOM building has been completed at Trilside Museum, shown at left. The barn-like structure was designed to blend with the museum's original colonial farmhouse at right.

The sprawling 67,000-square-foot track facility will accommodate a full range of competitive events and provisions for badminton, basketball, volley ball, boxing, wrestling, physical-conditioning activities and handball courts. Seating has been reduced from 5000 to 1000, plus portable seating for 1500 to serve special events. This change in the interests of cost reduction also meets neighborhood concern about drawing large spectator crowds and traffic problems. Another revision has shifted the hockey rink from a fully-enclosed to an open-sided structure.

Rounding out the complex, the second phase also provides a wide variety of outdoor sports and park facilities, including softball, soccer, tennis, basketball, racquet ball and street hockey courts, bicycle paths, family picnic areas and a boat-launching ramp.

South Shoreline Uplift

For the populous South Shore area, significant waterfront recreation projects have been completed or in various stages of progress, highlighted by a \$3 million, multi-purpose improvement program along Quincy Shore drive at heavily-patronized Wollaston Beach Reservation.



RECREATION FOR ALL TASTES is available at Parks District facilities. Canoeing on the Charles River, good fishing at the Lynn pier, a Sunday concert at Nahant Beach and skiing in the Blue Hills are examples of varied activity.

Lesson in 'Crime Doesn't Pay' Helps Cleanup at Peddocks

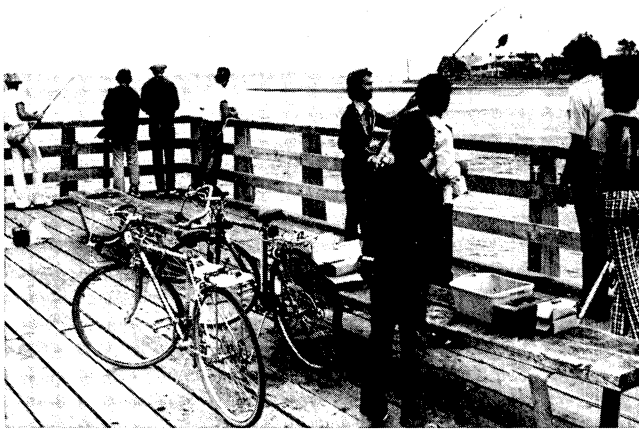
Lessons in "crime doesn't pay" and the rewards of hard work have been taught to 40 juvenile offenders in a work project jointly sponsored by the Quincy District Court and MDC.

The youthful offenders, including five girls, spent the 1977 summer season giving an uplift to Peddocks Island by clearing roadways, pruning fruit trees, cleaning buildings, developing picnic sites and building fireplaces. Their compensation from Federal CETA funds enabled them to earn money for fines and restitution for victims of their crimes ranging from vandalism to breaking and entering.

Culminating the Wollaston improvements will be a \$255,000 multi-service beach management structure and mini-park, scheduled for a construction start in the spring of 1978 at the newly-acquired site of the former Kimberly's Restaurant and an adjoining parcel. The structure will contain public rest-rooms and facilities for lifeguards, first aid and police. An adjacent landscaped park will provide benches, a shade shelter, walkway and lighting. Among other recent projects along Shore Drive have been a new culvert-type bridge, Black's Creek dredging, highway reconstruction and improvements at Caddy Park and historic Moswetuset Hummock.

At Nantasket Beach, plans are developing for seawall repair or reconstruction, a walkway or boardwalk along a section of Hull Shore Drive, landscaping, lighting and other upgrading. The planning phase is being coordinated with Hull Redevelopment Authority's apartment house project on an adjoining 33-acre site. Scheduled for 1978 construction is a relocated beach sanitary and service building.

Along Morrissey Boulevard in Dorchester's Savin Hill section, a neglected eyesore at Patten's Cove has been con-



Bob Crosby, Lynn Daily Item

Barrier Gates Reduce Access, Tighten Security at Reservations

A new safeguard to combat costly fires, vandalism and crime by reducing the number of access roads is being installed at six MDC park reservations.

In an effort to tighten security, locked barrier gates are being erected at entry points of primary fire trails, with boulders placed at smaller entry ways. Passage for horses and pedestrians will be available and keys will be provided to local fire departments for emergencies.

Reduction of access points is expected to counteract dumping and torching of stolen cars entering reservations at unauthorized locations, as well as preventing trash disposal and vandalism.

The \$118,514 project was launched to deal with a growing problem which has piled up repair and maintenance costs at MDC recreation facilities estimated at more than \$500,000 annually. Besides the burden of trash removal, vandals have wreaked heavy damage to pools, rinks, athletic field bleachers, signs and plantings. Plumbing has been ripped out at some facilities. Much time has been spent on removing graffiti. About 400 automobiles have been abandoned in reservations, many of them torched.

Reservations to be protected by barrier gates or boulders are Blue Hills, Middlesex Fells, Cutler Park, Stony Brook, Nahant Beach and Fowl Meadow.

verted into an attractive, five-acre natural park under a \$133,329 contract and work has begun on upgrading Malibu Beach at a cost of \$333,683. By the 1978 summer season, the recently-demolished old Malibu bathhouse will be replaced by a new management facility with a bathhouse, lifeguard station, first aid room and office space. The beach area is being



Gene Dixon, Herald American



restored to a park-like character, with trees, grass, seashore plantings, benches, shelters and walkway.

Demolition of the badly-vandalized and dilapidated City Point bathhouse in South Boston, considered beyond repair, has been completed. The site will be restored to beach area and equipped with a covered shelter.

A solution for future operation of Boston Arena is anticipated shortly through negotiations with neighboring Northeastern University, which uses the hockey rink extensively along with Boston high and junior high schools and other community teams. Arrangements are expected to include continued use by present participants. The arena became MDC property in 1975 when the Boston Arena Authority was dissolved. For the past two years, the City of Boston has had care and control for use primarily as a municipal sports center until July 1, 1977, when the city dropped plans to purchase the facility.



Jack Maley, MDC

WINTER SPORTS ACTIVITIES are featured by ice-skating at 25 MDC rinks, including hockey competition shown at Steriti rink in Boston's North End, and popular cross-country skiing at Martin Golf Course bordering the Charles River in Weston.

Policy Action Assures Open Space Preservation

"The life history of humanity has proved nothing more clearly than that crowded populations, if they would live in health and happiness, must have space for air, for light, for exercise, for rest, and for the enjoyment of that peaceful beauty of nature which, because it is the opposite of the noisy ugliness of towns, is so wonderfully refreshing to the tired souls of townspeople."

—Charles Eliot (1859-97), landscape architect and pioneer planner of the Metropolitan Parks System

A declaration of park land policy has been spelled out by the Metropolitan District Commission to preserve and enhance the priceless heritage of open space left by founders of MDC's park system nearly a century ago and nurtured by their successors.

The wide-ranging, explicit principles set forth by the Commissioners served notice that park land holdings are "the most significant and valuable asset" of the Metropolitan Park System and declared their determination to preserve open space for "public enjoyment, relaxation, inspiration and recreation."

The policy statement asserted the Commission's opposition to any sale or lease of park holdings for non-park or private use unless it is defined as inappropriate either for park purposes currently or in the future or for integration with park holdings. Any departure from this declaration must conform to specific guidelines, such as "a public desire compatible with open space values that can, in the Commission's judgement, best be provided to the public by a private party."

"The appropriateness of a proposed use can be determined only on a case by case basis," the Commission

stated. "In making such a determination, the Commission reviews such considerations as the character of the property affected, the impact of the proposed use, the number of potential users of the proposed service, the quality of this service, the reputation of the private party and the basic suitability of the service as a responsibility of the Commission."

Existing non-conforming uses were acknowledged but these will be terminated within a reasonable period following expiration of leases. However, 18 yacht clubs which are non-conforming uses in existence for decades would not be disturbed since they cannot feasibly be relocated. The Commission has established new lease fees for this category, prohibits their expansion and strongly opposes leases to any new yacht club. Other special uses cited by the Commission are occupants who deeded their property to the Commission and therefore received leases or favorable terms for long periods of time.

The Commission flatly expressed opposition to sale of any park land except in rare cases where no prospect of its use exists and outlined procedure for such disposition. This would require securing legislation permitting disposition for non-park purposes and then offering the land to other divisions within the MDC, a particular city or town for municipal purposes, other state agencies and finally for sale to the prior owner, if known, or to abutters and/or general private sale at fair market value.

In defining property inappropriate for sale, the policy statement specified parcels whose preservation contributes to the quality of nearby Commission land, abutting a river or wetlands or presenting an opportunity to strengthen the greenbelt along heavily impacted parkways.

New Franklin Park Zoo Set For 1978 Construction Start

Major construction is set for next year in the first stage of a new Franklin Park Zoo planned as an innovative year-round, 72-acre zoological garden featuring African wildlife in naturalistic, free-running settings.

The initial \$14 million phase in modernizing the 65-year-old zoo was given impetus by adoption of a modified master plan concept and assurance of \$4,895,000 in Federal public works funds under a grant from the Economic Development Administration. Revisions of the zoo development plan were approved by MDC after presentation by the Boston Zoological Society (BZS), which has managed the Franklin Park Zoo, Children's Zoo and Stone Zoo in Stoneham for the MDC since 1970.

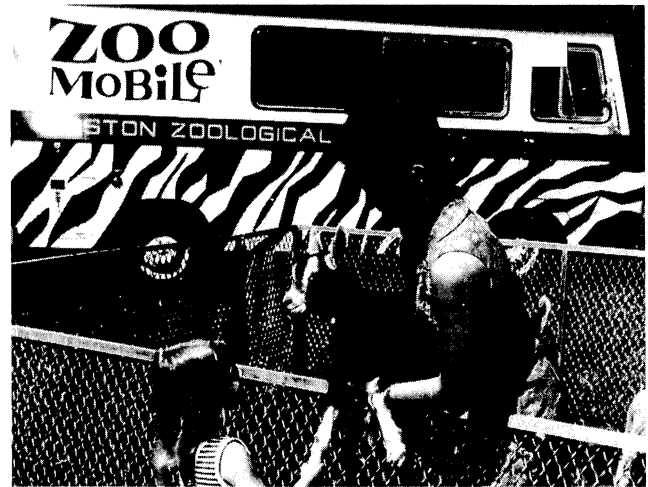
In the first step, demolition of the worn-out, outmoded Elephant House and Feline House will be completed early next year, followed by a 10-foot-high animal-proof perimeter fence in the Glen Lane-Circuit Drive area, where 16 acres of passive recreation and picnic facilities will be installed later. By the end of 1978, bids will be requested for the \$6.5 million African Tropical Forest pavilion, enclosing one acre of land. A natural habitat will be installed at a cost of \$1.3 million to exhibit gorillas, bongo antelopes, crocodiles, monkeys, pigmy hippos and natural dioramas for small animals, birds and reptiles.

As part of the next \$3.8 million construction stage, the Tropical Forest pavilion will be provided with six acres of outdoor ranges, where animals will roam during good weather. This stage will also include the savanna exhibit's holding structure, supplemented by a seven-acre African plains outdoor exhibit displaying giraffes, zebras, wildebeasts, gazelles, ostriches and lions. A 2½-acre savanna pavilion is being postponed until a later construction phase. Other work planned under the \$3.8 million program includes Children's Zoo renovation, renovations and repairs for the Antelope House, Bird's World and range area, picnic area, administration-hospital building addition, site landscaping, walkways, lighting, utilities, parking and miscellaneous improvements.

Subsequently, a 1½-acre bush forest pavilion will be constructed, along with 10 acres of outdoor exhibit area. Under the modified master plan, the desert pavilion has been deleted, but its concept will be preserved by displaying animals from that environment in the Antelope House area and on the range.

All animal exhibits will be complemented by new graphics systems, audio-visual displays and educational displays funded by BZS to enhance the zoo experience.

In addition to the Economic Development Administration's \$4,895,000 grant, the new zoo will be financed by a \$5.3 million balance in an MDC bond issue authorization, an anticipated \$1,205,000 contribution by the U.S. Bureau of Outdoor Recreation and BZS private funding of \$2.5 million for animals, plants and educational exhibits as well as advertising the new facility.



ZOO MOBILE transports animals for close, friendly contact with youngsters in classrooms and other locations in the Parks District.

Dentist Makes House Calls For Zoo Animals' Tooth Care

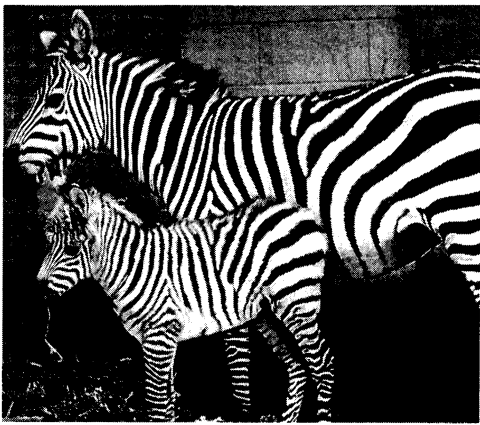
Health care for animals at MDC zoos knows no bounds and, of course, this includes house calls by a dentist.

Typical dental problems treated at Franklin Park and Stone zoos during the year were a tooth-filling for a lady monkey, root canal work on a lioness and repair of a broken tooth for a hyena. Needless to say, the animal patients are careful anaesthetized and sound asleep while the work is performed.

At the Stone Zoo, extensive improvements to the heating and ventilating systems have been completed at a cost of \$104,361 and a major \$451,543 refurbishing project will begin shortly at the Aviary, a tall, enclosed birdlife exhibit built as the zoo's centerpiece.

Meanwhile, BZS has been steadily broadening its scope of recreation, education, conservation and research activity and planning further expansion of these functions for the projected African zoo.

The BZS Education Department is now one of the largest and most diverse of any zoo or aquarium in the country. In conjunction with four other cultural institutions, BZS has embarked on an in-service training program for school teachers designed to utilize educational resources for classroom curricula, financed by a grant from National Endowment for the Humanities. Classroom groups from Metropolitan Boston schools have engaged in educational programs at the Children's Zoo, "A Bird's World" at Franklin Park and at Stone Zoo, utilizing close contact with animals, wildlife films, games, skits and crafts. Live animals have trekked to four Boston



BREEDING ACTIVITY at MDC zoos has successfully produced new inhabitants and helped to protect some endangered species from extinction. Among a variety of typical new arrivals are these offspring — zebra, tiger, camel and sea lion.

Unique 'People' Events Draw Diverse Participants to Zoo

There's no limit to the Boston Zoological Society's ingenuity in devising unique "people" events during the past year at Franklin Park Zoo.

There was the "International Celebration of People and Other Animals" with exhibits and activities dealing with environments, habitats and diverse cultures of both human and animal populations around the world. Then there were special children's events like the pumpkin decorating contest, a theater workshop based on familiar animal stories from children's literature, performances by National Theater for Children and the City Stage Company. Films were also shown, including the hilarious "Man's First Attempts at Flying" coincident with the annual kite festival and a documentary on the wolf as a threatened species. A highlight was an old-fashioned picnic complete with dixieland bands, barbershop quartets, sack and relay races and a tug of war.

branch libraries along with films, slides and graphics as part of a new community wildlife education program. Elementary schoolchildren have also been treated to guided topic tours for a learning experience in animal communication, endangered species and camouflage and coloration. Other educational opportunities were offered at the new Children's Zoo Theatre-dome, 194 Zoomobile visits to classrooms and other locations and 166 appearances of the Traveling Zoo at outdoor facilities during the summer vacation. A unique summer "City Safari" at Children's Zoo has been developed for pre-schoolers to



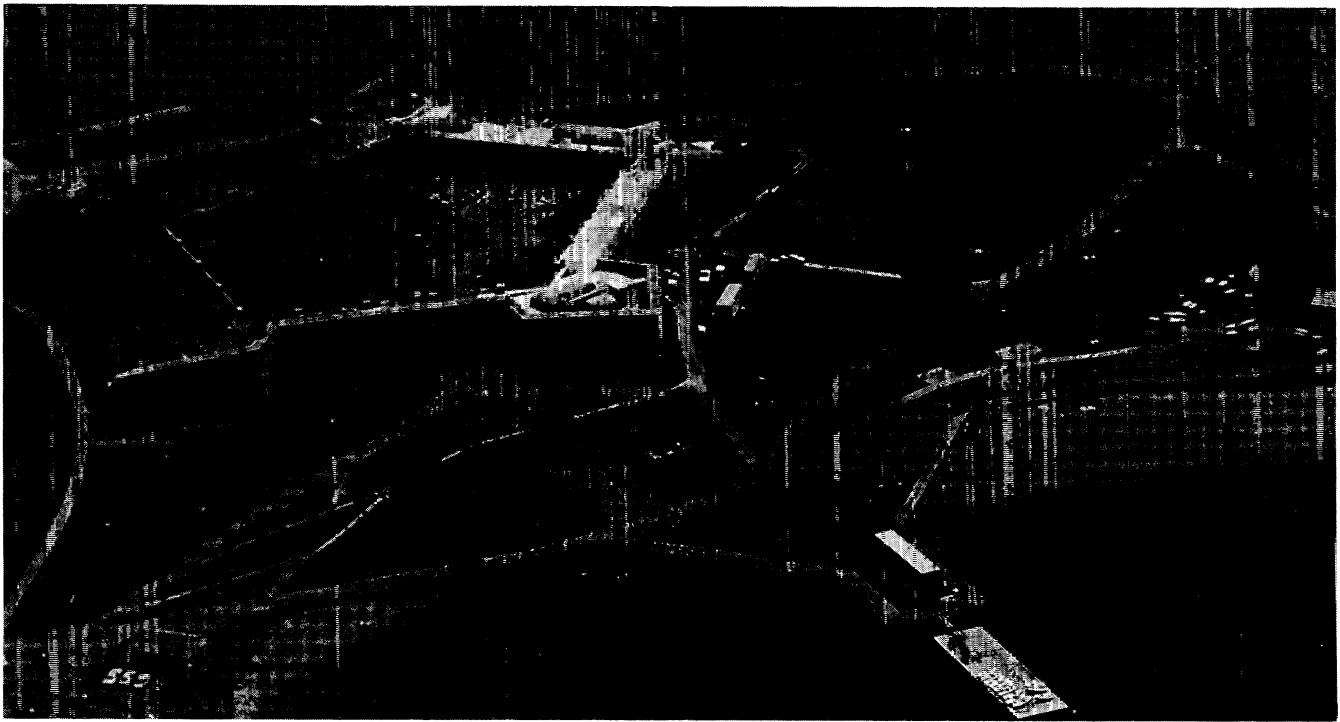
explore the world of zoo animals. Another attraction is a new insect exhibit.

Conservation efforts have had considerable success through emphasis of animal collections in breeding groups and acquisition of endangered species to protect them from extinction. A rare birth in captivity was a sea lion pup at the Stone Zoo pool. Among other new infants at MDC zoos during the year were Incian antelopes, a one-pound DeBrazza monkey and for contrast a 70-pound water buffalo, and three Siberian tiger cubs. A new Department of Behavioral Research has been established at Stone Zoo in collaboration with the University of Lowell.

This summer sees the beginning of a BZS conservation program at Franklin Park to train 20 neighborhood youths in planting, pruning and cleaning within the zoo, funded by Youth Conservation Corps.

The Advertising Club of Boston selected BZS as recipient of a year's free advertising to attract the larger attendance that Franklin Park enjoyed prior to school-busing tensions in Boston. Efforts this spring resulted in a 40% increase in attendance at Children's Zoo over last season.

BZS is continuing to strengthen its staff and financial base in preparation for future increased management responsibilities as well as administering revenue generated when admission is charged at both Franklin Park and Stone zoos.



HISTORIC FORT INDEPENDENCE is nearing completion of first stage restoration, opening the way for public viewing possibly next year. Adjacent to the Castle Island site in South Boston are shown MDC's fishing pier (upper left), Pleasure Bay sailing facility and beach (lower right) and park area.

Major Restoration Near at Famed Ft. Independence

First-phase restoration of an outstanding historic site at Fort Independence on Castle Island, South Boston, has been nearly completed, clearing the way for limited public viewing next year.

The initial \$857,000 project has provided for concrete waterproofing and restoring earthen ramparts, installing a walkway overlooking Boston Harbor, preparing gun casemate rooms for exhibits and constructing utility lines. Simultaneously, archeologists from Brown University have uncovered hundreds of historic artifacts, many now on display in the MDC headquarters lobby.

Planning is underway on restoring interior rooms and developing an interpretive tour of the fortifications, whose history dates back to 1634 as one of the oldest, continuously fortified sites in the country. The fort was originally built of logs, earthworks of mud and masonry made of lime from oyster shells. It was rebuilt or substantially improved eight times, once by Lieut. Col. Paul Revere two years after its destruction in 1776 by the British during their evacuation of Boston. The present granite structure was completed in 1851.

The facilities, linked to the mainland by a causeway since 1891, have also housed a prison and a marine hospital established in 1799, a forerunner of the U.S. Public Health Service. As the fort's commander, Paul Revere led the first 4th of July celebration in 1777, an event recalled by a 200th anniversary ceremony there on Independence Day of 1977.

At Fort Warren on Georges Island, 12 rooms were available to the public for the first time as part of an extensive improvement program aided by Federal funds. New interpretive signs have provided a self-guided tour of the Civil War fortification which served also as a prison for Confederate civil and military personnel. During the Spanish-American War and World War I and II it was used as a mine center for harbor protection. An archeological program completed this year has unearthed military artifacts related to each of these wars as well as objects dating to the Revolutionary War period.

Transfer of Bunker Hill Battlefield and Monument to the National Park Service as part of the new Boston National Historical Park was formally marked in a ceremony on the monument grounds last November. The MDC had maintained and operated the facilities since 1919.

Water Supply Dilemma Awaits New Study

A new decision-making process has been adopted for breaking a 10-year deadlock over augmenting MDC's water supply by flood-skimming the Connecticut River.

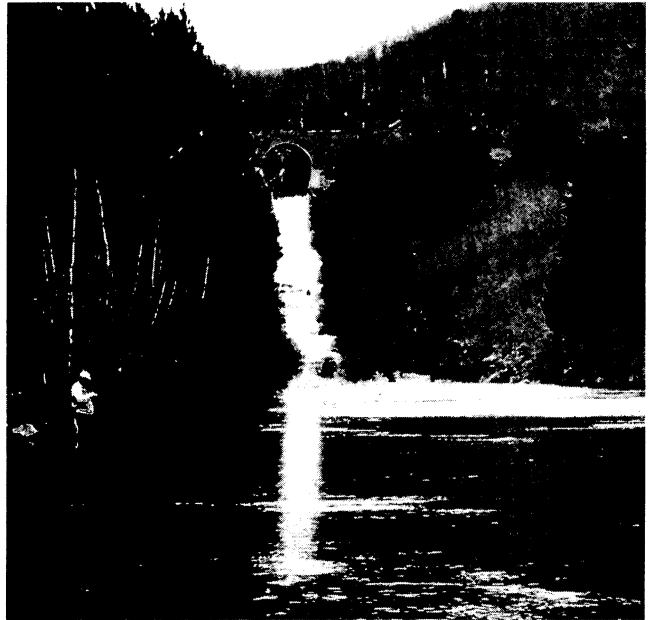
In an effort to resolve controversial issues and reach a final determination, MDC has been requested by the State Executive Office of Environmental Affairs (EOEA) to proceed with preparation of an environmental impact statement and review of other options. Opposition from the river area has led to a decision by EOEA to include representation from the Connecticut River Valley in Massachusetts and the State of Connecticut on a citizens advisory committee, as well as Metropolitan Boston interests.

The long-delayed plan, authorized by legislation in 1967, provides for strictly limited diversion of flood flow to MDC's principal water source at Quabbin Reservoir, producing the equivalent of 72 million gallons per day (mgd) annually. Stressing the urgency of a new supply, daily consumption currently averages 321 mgd, while the safe yield from MDC resources remains at 300 mgd.

District Closed to New Members

The tight water supply has led to a recent policy decision temporarily closing the door to accepting new members in the Metropolitan Water District until an additional supply is obtained. The action has already affected four Metropolitan Boston communities with severe supply problems — Bedford, North Reading, Stoughton and a section of Lynnfield. However, emergency water supplies have been made available to Stoughton and Bedford via adjacent Water District members. The City of Worcester was also assisted during 1977 when it utilized its privilege of taking an emergency supply. Prior to the moratorium on new customers, the hard-pressed Western Massachusetts towns of South Hadley and Amherst, including the University of Massachusetts, were offered up to five mgd of MDC water as an alternative if no other source can be found locally. Several other towns also in the Quabbin Reservoir area are considering MDC as a possible solution to water problems.

Planning has been well advanced for facilities to flood-skim a limited volume of the river's flow during the spring freshet season, restricted by legislation to 375 mgd and only when the flow is 17,000 cubic feet per second or more at Montague, Mass. The diversion would amount to about 1% of the flow in excess of 17,000 cubic feet per second. A Special Legislative Commission which studied the proposed diversion reported in 1970 that "the projected total water needs of the Connecticut River Valley, including water supply, recreation, navigation, fish and wildlife, cooling and water quality, can be amply met by a river flow of 10,000 cubic feet per second at Thompsonville, Conn." and that "a corresponding flow at Montague, Mass. would be considerably less than 10,000



Julia Giannangelo, MDC

IDYLLIC SCENE shows the spillway channel discharging overflow from Quabbin Reservoir to the Swift River.

cubic feet per second." Maximum decrease in river flood stage caused by the diversion would be about two inches at Montague City or about one-half inch at the Thompsonville gage, according to a 1976 environmental impact statement by the Army Corps of Engineers.

The plan calls for a 10-mile aqueduct between Quabbin and the Northfield Mt. pumped storage reservoir built by Northeast Utilities for hydro-electric power production, containing additional capacity for the proposed diversion. Delays have been caused by legal complications on reaching an agreement with Northeast Utilities. Meanwhile, river valley interests have raised controversial environmental issues and contended that alternative solutions were available, while the State of Connecticut has protested on the basis of riparian rights and down-river effects.

River Diversion 'Most Effective' Source

The 1977 State Water Policy Study draft report of the Executive Office of Environmental Affairs (EOEA) concluded that the question of MDC supply augmentation requires "primary consideration in the development of water supply strategy" and stated:

"The single most effective, least environmentally disrupt-

Fluoridation Plant Ready for 1978, Lead Corrosion Control Successful

Fluoridation as a dental health measure is slated for the Metropolitan Water District early in 1978 upon completion of a \$753,000 facility in Southboro linked with tunnels carrying water into the district from Quabbin and Wachusett reservoirs.

The process is expected to save upwards of \$7 million annually for persons under the age of 20 by reducing tooth decay, according to an estimate by Massachusetts Dental Society. Its annual cost has been estimated at 10¢ per capita versus 25¢ if member communities fluoridated separately. Seven of the 32 municipalities presently served by the district are already fluoridating.

The program follows a 1972 ruling by the Attorney General that MDC must fluoridate its water upon approval by boards of public health in a majority of the district members. Health authorities in 28 communities have taken favorable action. Fluoridation has been endorsed by the State Legislature which approved funding in 1974, the State Commissioner of Public Health, State Department of Environmental Quality Engineering and the Federal Environmental Protection Agency.

A process for overcoming corrosion in outmoded lead pipes still in partial use by municipal systems and in some older homes will also be housed at the new facility. Application of a caustic soda solution for this purpose began in May at a pilot plant to offset the corrosive effect of MDC's soft water. Action was taken following sampling in Boston, Somerville and Cambridge households indicating lead content of drinking water in excess of Federal standards. The U.S. Environmental Protection Agency, reported however, that the problem was not with MDC water, described as "one of the finest serving an urban area anywhere in the country." Results obtained currently indicate substantial improvements due to this program, according to the EPA.

... lowest unit-cost measure to augment the MDC's basic source of water supply and make up the deficit between current safe yield and projected withdrawals is to make operational the diversion of Connecticut River seasonal flood flows . . ."

It was decided by EOE, however, that a final determination should be withheld until an environmental impact statement and further review of other options are completed. Completion of this procedure, estimated at 12 to 18 months, and consideration by state and Federal agencies indicate a timetable of at least five to six years before river flood flows

can be tapped — assuming that approvals are forthcoming and litigation can be avoided.

The EOE has also established stringent requirements for inter-basin water transfers, including utilization of all local water resources, effective water conservation measures and determining minimum stream flow requirements for source streams as part of an environmental impact review. The Water Supply Policy Study report stated, nevertheless, that inter-basin transfer must be maintained as a necessary option "since the urban water resource is extremely limited and there are multiple use demands on it."

In its conservation efforts, MDC has sought legislation to provide financial aid for district members in locating sources of water loss from leakage in municipal systems and for remedial construction. Authority has also been requested to establish regulations on water use and to require repeal of discounts for quantity use. An initial \$140,000 program has been instituted by MDC to improve accuracy of its metering system monitoring water delivered to cities and towns.

A long-feared water crisis has been averted only by four successive wet years during 1972-75, producing precipitation of 30.35 inches above average at the Quabbin watershed, followed early in 1976 by the first overflow in 15 years. But the reservoir dropped 13.6% to 7.38 feet below capacity by the end of the year, although rainfall was only one-half inch below average. Elevation has continued below capacity, dropping as low as 8.87 feet below full elevation or 83.7% of capacity on March 4. Engineers have long felt that the reservoir cannot be supported even by normal precipitation. Quabbin's status is particularly significant, for the 412 billion gallon reservoir represents about 85% of MDC's total storage capacity and its sources encompass approximately 69% of the system's watershed area.

Of concern to water supply managers is the memory of the 1961-65 drought which reduced Quabbin to 45% of capacity — down by 34 feet and 227 billion gallons. An analysis has shown that a recurrence of the drought would drop the level to 31% based on current consumption.

Big Potential Demand Faces MDC

Meanwhile, further demands on resources of the Metropolitan Water District lie ahead. The last two communities admitted to the district — Woburn in 1972 and Wellesley in 1974 — will have access to MDC supply as partial users upon completion of connection lines, distribution, storage and pumping facilities. By 1990, 24 municipalities may have no option other than MDC for supplementing local sources, according to the 1976 Environmental Impact Statement on river diversion prepared by the Army Corps of Engineers. An MDC report to the Legislature in 1972 listed 41 communities as potentially requiring MDC water. Estimates of the prospective 1990 deficit have ranged from 70 mgd to 175 mgd, including the needs of 34 district members, 10 communities in Central and Western Massachusetts served under special agreements and prospective users.



Jack Maley, MDC



Jack Swedberg, Fisheries & Wildlife Div.



Extensions to North, South Planned

Preparations are already in various stages of progress for major water system extensions to the north and south of Boston affecting 12 communities where needs are either pressing in some cases or anticipated within five to 15 years.

To the north a \$1.4 million pipeline has been completed between Woburn and the westerly shore of Spot Pond Reservoir. Installation of pumping equipment at the Spot Pond station and a pipeline under the reservoir to implement the extension are scheduled for a construction start in 1978. A \$6 million legislative authorization is being sought for other facilities required to serve Woburn, as well as a new pipeline to supplement flow and boost pressure for Stoneham and Wakefield, both present members of the Water District. The program has been designed with sufficient capacity for eventual extensions to Reading and North Reading, the latter already beset by a water problem.

Construction of facilities to serve seven communities south of Boston is awaiting completion of an environmental impact report and other steps required by the Executive Office of Environmental Affairs. The \$17 million program, authorized by 1974 legislation, will provide service to six potential members,

QUABBIN RESERVOIR HAS MANY FACETS other than its primary function as a water source. Quabbin Park Cemetery was established for re-interment of 7500 bodies from 34 cemeteries in the four towns taken for reservoir purposes, as well as for descendants and former residents. For public use are an observation tower, picnic tables and shore and boat fishing. Varied wildlife abounds, such as the bobcat and eagle pictured here. Also shown is the hydroelectric power station for generating energy from discharge of water required for low-flow augmentation of Swift River which is impounded as a major supply source for Quabbin.

Avon, Braintree, Holbrook, Randolph, Stoughton and Weymouth, and an additional supply for Canton, presently a partial user member. Stoughton has already been confronted by a water crisis, while Avon is seeking an auxiliary supply. Studies have indicated the other communities will require a supplementary source within five to 15 years. In Stoughton a threatened moratorium on construction of multi-family housing has been averted by allowing Canton to share a portion of its MDC allotment with the town. The southern extension calls for 15 miles of new water mains and a pumping station in the Randolph section of Blue Hills Reservation, with Blue Hills Reservoir serving as a major distribution facility.

The way was cleared for the southern extension by activation of the huge \$19 million Dorchester Tunnel in 1975. The 10-foot-diameter tunnel with 300 mgd capacity runs 6 1/2 miles from Chestnut Hill at the Brighton-Brookline line to Dorchester Lower Mills. It was designed to boost pressure and supply for large areas of Boston and Brookline and for Quincy, Milton, Canton and Norwood.

The tunnel was shut down for nearly five months until late February for inspection following indications of water seepage near Morton Street, Dorchester. The inspection revealed that cracks had developed in an area where geotechnical engineers found unusual geological formations that had apparently shifted and damaged the tunnel liner when water pressure was applied. A temporary plug was then installed to seal off the damaged section pending repairs and the remainder of the tunnel was restored to use. During the shut-down, water was supplied through distribution lines used prior to opening of the tunnel.



Jack Swedberg, Fisheries & Wildlife Div.

Quabbin's Prescott Peninsula Site of Famed Observatory

Eyes of the scientific world are watching eagerly for discoveries at a facility on an isolated site at Quabbin Reservoir's Prescott Peninsula.

It's the Five College Radio Astronomy Observatory where huge high-powered twin telescopes were dedicated last October. The \$7.8 million installation houses the country's largest millimeter wave length radio telescope, which feeds radio waves from celestial objects into a computer for storage and evaluation. A meter telescope, in operation there since 1970, analyzes electromagnetic radiation from pulsars or neutron stars. Four 120-foot-diameter dishes are utilized to track emissions from space.

The telescopes were placed at the remote site, five miles into the forest and 20 miles from Amherst, to avoid sounds and signals which can interfere with telescopic observations. This is another example of Quabbin's multiple use, which also includes recreation opportunities, wildlife refuge, open space, and hydro-electric power.

The costly burden of bacterial testing imposed on municipalities under the Federal Clean Water Act, effective June 24, has been taken over by MDC laboratories. With the number of tests estimated at 1000 per month, the centralized service is expected to save Water District members \$10,000 to \$15,000 monthly in commercial laboratory fees. At the same time, the program will eliminate much of MDC's distribution sampling. Other types of analysis required by Federal law involving less frequent testing will be continued by the State Department of Environmental Quality Engineering.

High Marks for Water Quality

In recent surveys related to health problems, MDC water has earned high marks for its low level of salt and chloroform. In comparison to the 20 parts per million (ppm) standard set



Jack Maley, MDC

informally as too salty by state health authorities in relation to heart or hypertension conditions, MDC water contains only 5 ppm in contrast to some local supplies running as high as 100 ppm. A nationwide water quality survey of chloroform content has shown the district's supply ranked among the best with only four parts per billion parts of water, compared to a high of 311 in one major city. Because of its high quality, MDC water requires only small amounts of chlorine and ammonia.

The necessity for protecting water purity levels from contamination by trespassers has led to plans for relocating fences around Chestnut Hill Reservoir and building a 2.8-mile fence around Weston Reservoir. Outside the fences, an urban park will be developed at Chestnut Hill while at Weston open land will be available for limited recreational use without danger of pollution. Both reservoirs have had serious problems with flagrant violations involving waste matter from people and pets, litter and even swimmers, endangering water quality and resulting in many arrests.

Increased revenue is anticipated from sale of surplus hydro-electric power generated at Wachusett and Quabbin reservoirs. Based on a rate study report, negotiations are planned to hike the rate set in long-term contracts with utility companies. An analysis showed revenue, amounting to \$162,793 in 1976, does not meet current cost of power production. Nearly 31 million kilowatt hours of power were generated, with one million KWH utilized for MDC purposes.

Groundwork Underway for Huge Clean Water Program

Preparations were underway during fiscal 1977 for implementing the biggest clean waters effort undertaken by the MDC and the most ambitious ever planned in New England.

The \$855 million pollution control program for Boston Harbor and the Charles and Neponset rivers is the outgrowth of a three-year Boston Harbor-Eastern Massachusetts Metropolitan Area study (EMMA) completed in 1976.

Principal recommendations call for upgrading the Deer Island and Nut Island treatment plants from primary to secondary treatment, eliminating sludge discharge into the harbor, alleviating combined stormwater-sewage overflows, advanced treatment plants on the mid-Charles and upper Neponset rivers and extensions and improvements of MDC's sewerage system. Its cost would be financed 75% from Federal funds, 15% by the State and 10% by the Metropolitan Sewerage District.

EMMA's provisions presage a new era in pollution control and also satisfy rigid requirements of Federal Water Pollution Control Act Amendments of 1972 (PL 92-500). Much of the groundwork has been laid for the facilities planning phase, which awaits completion of Environmental Impact Statements (EIS) on EMMA's proposed facilities and alternatives being prepared by the U.S. Environmental Protection Agency (EPA).

The EIS outcome will settle a number of issues and finally crystallize EMMA's direction, such as whether to build and where to locate advanced treatment satellite plants on the Charles and Neponset rivers. A by-product of the satellite proposal would be discharge of reclaimed wastewater to augment river flow, as well as relieving the overburdened Nut Island plant. Another question involves secondary treatment facilities proposed for both harbor treatment plants, which now may be combined at Deer Island. Newly-enacted state legislation has precluded the controversial landfill plan in Quincy Bay for expanding Nut Island to accommodate secondary treatment. A separate EIS on sludge disposal is also under review.

EMMA Timetable Set

A timetable for implementing EMMA was developed last August under a joint pollution discharge elimination and enforcement compliance schedule promulgated by the EPA and the State Division of Water Pollution Control. The schedule stipulates construction completion by 1986 of 12 major projects representing the bulk of the program. A number of miscellaneous interceptors and pumping stations would be finished by the year 2000 under the EMMA schedule. The MDC noted in the agreement, however, that compliance must be contingent upon project authorizations and appropriations, timely completion of environmental impact statements and expeditious review and approval of grant applications.

In preparation for the go-ahead from EPA, state legislation was enacted last October to finance engineering work for the 12 major EMMA recommendations and actual construction of

THE EMMA PROGRAM

	Completion Date ⁽¹⁾	Cost, Millions of dollars ⁽²⁾
1. Elimination of sludge discharges into the harbor from Deer Island and Nut Island treatment plants	1980	\$ 26
2. Combined sewer overflow abatement in Dorchester Bay	1983	77
3. Nut Island primary expansion	1984	50
4. Nut Island secondary treatment	1985	87
5. Deer Island primary expansion	1984	42
6. Deer Island secondary treatment	1984	150
7. Additional facilities for secondary sludge management	1985	28
8. Satellite treatment plant discharging to the middle Charles River (or transport to and further expansion of Nut Island Treatment Plant) ⁽³⁾	1984	50
9. Satellite treatment plant discharging to the upper Neponset River (or transport to and further expansion of Nut Island Treatment Plant) ⁽³⁾	1984	41
10. Combined sewer overflow abatement in the Charles River (Back Bay Fens and Muddy River)	1983	84
11. Combined sewer overflow abatement in the Neponset River	1983	23
12. Combined sewer overflow abatement in the Inner Harbor	1986	86
Others: interceptors and pumping stations	1975-2000	111
Total		\$855

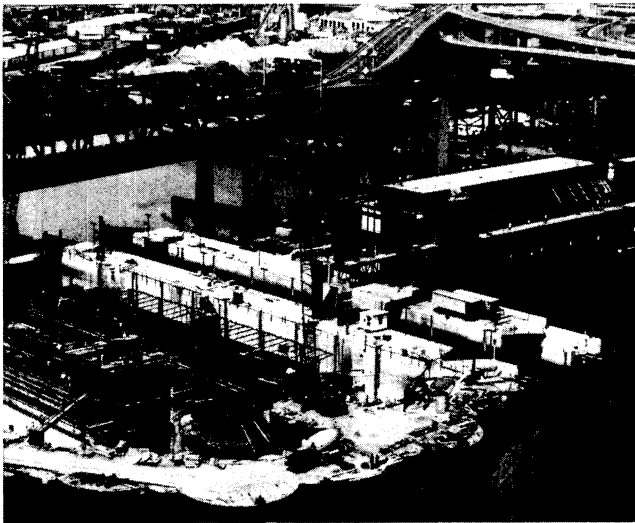
(1) Completion dates are stipulated in the Federal-State pollution discharge elimination schedule of August 1976.

(2) Costs shown are in millions of dollars based on January 1975 (ENR 2200) prices and include engineering and contingencies.

(3) Costs are given for the former case.

three of the projects. Underway is an analysis of inflow-infiltration in the Deer Island and Nut Island service areas concerning groundwater seepage into sewer lines and inflow from illegal sewer connections, as required by EPA. An evaluation of alternatives for management, staffing and coordination, and development of a computerized tracking system is nearing completion. And the selection process has begun in designating consultants for the facilities planning phase on projects to abate combined sewer overflows affecting Dorchester Bay, Charles River Basin, Neponset Estuary and Boston Inner Harbor.

In other steps to satisfy Federal requirements, MDC has completed a user charge/industrial cost recovery study, drafted revised sewer use regulations and is continuing work on an industrial waste survey. A new system of sewer use charges by cities and towns and revised MDC assessments have also been provided by state legislation enacted in 1975 to establish MDC eligibility for Federal and State sewerage works grants and applying also to sewerage projects built by municipalities with Federal aid. The new law's provisions for revised MDC debt assessments became effective July 1,



Jack Maley, MDC

NEW CHARLES RIVER DAM is in its final phase, with completion scheduled for the spring of 1978. The 1200-foot facility will contain a flood control pumping station, three navigation locks, a police patrol boat building, fishway for up-river access and a walkway viewing area. It will also enlarge the river basin by 30 acres and minimize intrusion of pollutant salt water. A park area on the Charlestown side is included in the plans. The facilities are being built by the Army Corps of Engineers in cooperation with MDC.

1976 and for operations and maintenance on July 1, 1977. Sewer use charges and industrial cost recovery will be required when projects eligible for grants are completed.

Meanwhile, an ongoing improvement program in the Charles River Basin made substantial progress toward clean water goals aimed at enhancing enjoyment of passive recreation, boating and fishing. A major pollution source — overflows of combined stormwater and sewage — is being combated by building large-capacity interceptor sewer lines augmented by storm detention and chlorination stations.

Construction is well underway on the \$21 million Charles River Marginal Conduit Project designed to alleviate pollution in the lower basin. These facilities will also abate pollutant overflows in the one-half mile expansion of the basin created by the new \$35 million Charles River Dam structure adjacent to the Central Artery, slated for completion in April 1978.

A key element of the marginal conduit project will be a storm detention and chlorination plant and pumping station on the East Cambridge shoreline. Work began early in 1977 on the \$12.3 million facility scheduled for completion in late 1979. Two other phases are well advanced. Nearly finished is a \$3.6 million force main, eight feet in diameter, which will discharge treated effluent from the projected storm detention-chlorination station into the harbor below the new dam, regardless of the tide level. The contract includes an additional 18-inch force main to carry screenings and sanitary sewage from the station to the Charlestown interceptor for treatment at



POLLUTION CONTROL measures include this typical 8-foot diameter sewer pipe to be installed in the Charles River Marginal Conduit Project at the lower basin.

Deer Island. Another \$4.8 million contract with a 1979 completion date provides for large interceptor sewers to divert overflows from Boston, Cambridge and Somerville marginal conduits to the detention-treatment station.

Besides its flood control purpose and triple locks to facilitate heavy marine traffic, the new Charles River Dam has a pollution abatement function — minimizing salt water intrusion into the basin flowing through the single boat lock at the existing dam built in 1908. The saline layer, devoid of oxygen and highly polluted, remains in stratified form on the basin bottom. This prevents vertical mixing and aeration, stifles fish and plant life and produces hydrogen sulfide gas odors at times. A remedy for the problem will be completed in the spring of 1978 under a \$534,583 contract for installing compressed air diffusers in strategic deep portions of the basin. This de-stratification process will force salt water from the river bottom to mix with oxygenated water at upper levels, insuring the presence of oxygen throughout the water column. The diffusers will be turned off when the water is thoroughly mixed and utilized again only when signs of stratification are detected.

Sewerage System Expansion

Upriver, the final segment of a major North Charles interceptor on the Cambridge shoreline, near Memorial Drive, is due for completion in a few months. The new \$16.8 million interceptor containing pipes as big as 8½ feet in diameter stretches three miles from Main Street to the vicinity of Mt. Auburn Hospital, supplementing 20 miles of relief sewers built in recent years on the South Charles.

The interceptors on both shorelines were designed to enlarge existing capacity carrying wastewater to Deer Island for treatment and they also tie in with the six-year-old Cottage Farm Stormwater Treatment Station in Cambridge, near B.U. Bridge. This innovative facility is similar to the storm detention-

chlorination station being built in the lower basin as part of the Charles River Marginal Conduit Project and others planned under the EMMA program to deal with combined sewer overflows affecting Dorchester Bay, Neponset Estuary, Boston Inner Harbor and the Fens-Muddy River area in the Back Bay.

During storms the Cottage Farm prototype plant intercepts and treats overflows of combined sewage and stormwater from 26 discharge points on both banks of the basin. The process provides for screening, settling and chlorination before discharging effluent from holding tanks into the river and subsequent disposal of pollutant solids into sewer lines for treatment at Deer Island. In 1977 the plant was activated 33 times during storms, 12 of which were entirely contained by the facility's holding tanks with no discharge to the river. A total of 468 million gallons was diverted to the station for processing. The facility has shown significant results in removing solids and harmful bacteria before discharge to the basin at an estimated cost of \$293 per million gallons treated.

The Charles River cleanup will appreciably supplement current activity on upgrading the quality of Boston Harbor waters.

An important harbor program — rehabilitation of approximately 100 defective tidegates to alleviate pollution and prevent salt water intrusion into the sewerage system — has been virtually completed at a cost of \$1.1 million. The faulty tidegates in the Boston main drainage system, East Boston and Chelsea have allowed sea water to flow into sewers, causing flushing of sewage into the harbor on tide cycles and intrusion of corrosive salt water into sewer lines leading to Deer Island treatment plant. The salt water reduction has improved plant operation and maintenance as well as production of methane gas for energy use. The tidegates will revert to the two cities for operation and maintenance.

In another aspect of the harbor problem, proposed incineration of sludge from the Deer Island and Nut Island plants is under review by the Environmental Protection Agency. Meanwhile, an experiment is underway to test a unique high energy electron irradiation method of disinfecting sludge and wastewater. The pilot program is jointly financed by MDC, National Science Foundation and State Division of Water Pollution Control, and is being operated by MIT and High Voltage Engineering Corp. A small-scale sludge composting study is also planned to determine compost characteristics as a non-agricultural soil conditioner or loam substitute and yield samples for testing by potential users, such as commercial greenhouses and park departments.

Preparations are proceeding for a \$12.3 million construction program to expand capacity of the sewerage system in three areas. Work will begin in 1978 on a \$3.9 million enlargement of the existing sewer line siphon at the Quincy-Weymouth Fore River Bridge, tripling existing capacity to 63 mgd for flows from Braintree, Randolph and Weymouth. Two 1800-foot pipes of 60 and 54-inch diameter will be installed at a lower level, 58 feet below mean low water in the newly-deepened channel which has been dredged to accommodate large shipping vessels, as required by Federal regulations. Construction is scheduled in 1979 on expansion of the Reading pumping station and increasing capacity of sewer lines

serving Reading, Stoneham and Wakefield by 14 mgd at a cost of \$3 million. A \$5.4 million relief sewer accommodating 2.5 mgd additional flow to relieve an overloaded line serving sections of Brookline, Newton and West Roxbury is in the early design stage.

Industrial waste inspections for determining adherence to MDC and Federal requirements have now covered 1957 industries in 16 of the Metropolitan Sewerage District's 43 cities and towns, supplementing a prior questionnaire survey of all member communities. Violations were found in 160 industries which are presently pre-treating, implementing pre-treatment or modifying their systems to comply with standards. Additionally, all known metal platers and latex processors have been inspected. The program was undertaken as a requirement of the permits issued by EPA to MDC for the Deer Island and Nut Island plants under the National Pollution Discharge Elimination System.

A deadline of December 31, 1979 has been set for phasing out agreements allowing 14 communities outside the Sewerage District to discharge septic tank and cesspool waste into the MDC system. The interim arrangement originated in 1974 as a crack-down on illegal discharge into MDC sewers by disposal companies. Based on a per capita charge for non-sewered population of these non-members, the program has yielded \$152,000 in fiscal 1977.

Flood Control Projects

Flood control projects totaling \$9 million were active during 1977, in addition to the nearly-completed new Charles River Dam.

A \$5.9 million pumping station at the Amelia Earhart Dam is now in readiness just below the confluence of the Mystic and Malden rivers. The installation, equipped with pumping capacity of nearly two million gallons per minute, is designed to cope with major storms, particularly for pumping during high tides. A fish ladder has been incorporated to facilitate passage of fish upstream from the dam.

On Mother Brook in Boston and Dedham, work has begun on a \$488,654 program to protect built-up areas from flood damage, develop passive recreation, such as walkways, fishing and boating, and improve the area's aesthetics. The contract provides for restoration of two ponds, a pedestrian bridge over Mill Pond Dam in Hyde Park, dredging a portion of the brook, repairs of three dams and a general cleanup. The historic 3½-mile waterway running between the Charles and Neponset rivers was the first canal dug in America by English settlers for industrial power purposes.

Construction is scheduled in a few months on two flood control projects in the downtown Malden area. One provides for extending the enclosure of Spot Pond Brook an additional 1100 feet to its confluence with Malden River at a cost of \$685,000. The other is a \$2 million project for enclosing 1200 feet of Malden River as part of the city's redevelopment program.

Big Bridge Program Planned, Safety Projects Progressing

Significant progress toward replacement or reconstruction of heavily-traveled bridges highlighted 1977 activity on improving MDC's 168-mile network of parkways and roadways.

A large-scale bridge program involves several major structures weakened by age or by a shift from an original designation for pleasure vehicles only to general traffic, including heavy trucks in excess of design capacity. Field inspection of MDC's 87 bridges has shown also that many others were in need of repairs. Through a cooperative effort with the State Department of Public Works (DPW), substantial Federal funds will be tapped for much of this work.

In conjunction with the inter-agency program, DPW next year will start a \$3.5 million project to replace the superstructure of Wellington Bridge carrying Route 28-Fellsway traffic over Mystic River at the Somerville-Medford line. Emergency repairs have kept the structure in service in recent years, with a ban against trucks. Design work has begun by DPW on replacing the Harvard Bridge superstructure over the Charles River. In other DPW-MDC projects, work was completed during the year on Bussey Street Bridge over Mother Brook in Dedham costing \$190,000 and River Street Bridge in the Hyde Park section of Boston, \$234,500, both with Federal aid.

Construction is scheduled in 1978 on replacement of General Lawrence Bridge spanning Mystic River at Veterans Memorial Parkway, Medford, near Route 93 expressway. The new concrete arch structure, estimated at \$6 million, will be built on a new alignment followed by demolition of the existing bridge where truck weight restrictions have been in effect. Work will begin late in 1977 on a \$755,000 repair job at Dorchester Bay Bridge, Morrissey Boulevard. Both projects will be performed under MDC contracts. In the design stage is reconstruction of the truss bridge on Alewife Brook Parkway, Cambridge, running over railroad tracks.

Recognizing the importance of expert surveillance, MDC has assigned 14 employees, including two Metropolitan Police divers, to attend a special course on bridge inspection.

In the interests of motorist and pedestrian safety and smoother traffic flow, more than \$2 million was expended on 19 projects modernizing lighting, resurfacing, guard rails and traffic signals. Nearly one-half of this expenditure was for resurfacing roadways and upgrading sidewalks and drainage in various locations. Guard rail installations included an important safety project on a one-mile stretch of Storrow Drive and Soldiers Field Road costing \$168,000. A \$512,213 street-lighting contract was completed on Veterans of Foreign Wars Parkway, West Roxbury, replacing an outmoded 40-year-old system along a three-mile section, where 367 laminated wooden standards were installed to blend with the parkway



Kevin O'Malley, MDC

VERSATILE INSPECTION EQUIPMENT has been utilized for close examination of MDC bridges to detect structural problems requiring attention.

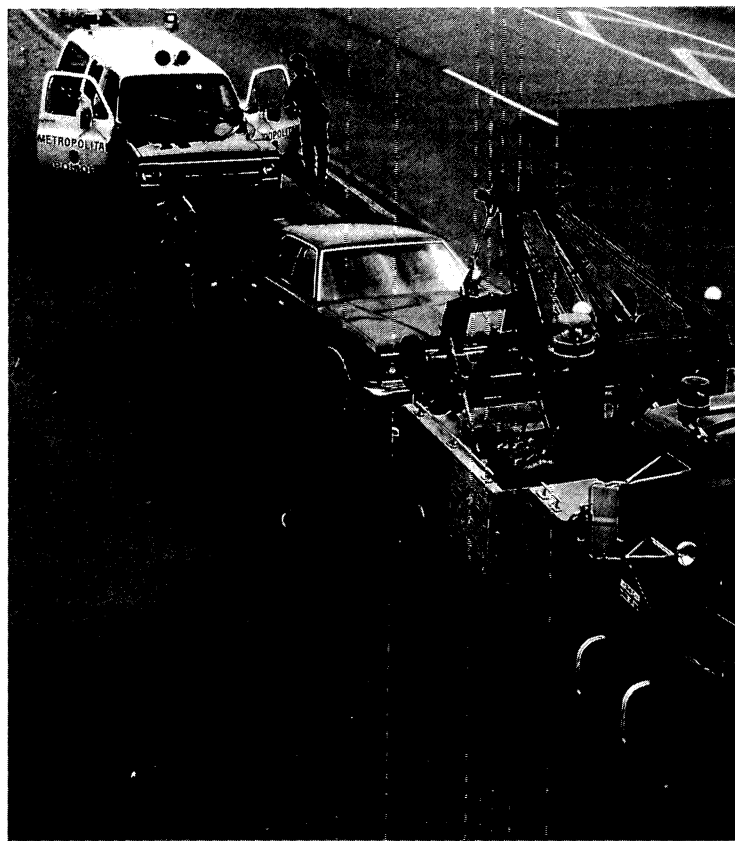
environment. Construction is nearly finished on a \$271,569 lighting system along three miles of Charles River Embankment walkways between B.U. Bridge and Leverett Circle, Boston.

Installation has been completed on 11 flashing warning signs, activated by electronic-eye laser beams, designed to forestall trucks from inadvertently entering Storrow Drive Soldiers Field Road and Memorial Drive and jamming at low-level underpasses or bridges with resultant massive traffic tieups.

As a traffic safety measure, 1000 new-type, high-visibility, reflector lane markers have been installed at accident-prone locations on five key parkways and bridges to test their effectiveness. These are a more sophisticated variation of a previous installation, which have been provided at no additional cost. The reflectors project slightly above the road surface, retract when struck by a vehicle and spring back into place. The units are designed to supplement or replace painted lines.



Boston Globe



Officer Robert F. Tierney, MDC

Police Overcome Racial Crisis in 'Open Beach' Issue

The 1977 summer season posed a major racial crisis for Metropolitan District Police in upholding the principle that all people have a right to use a public beach.

For two weeks of repeated tense confrontations on the sands of South Boston's Carson Beach, the police and MDC officials stood firmly against challenges that threatened constantly to break into massive violence.

The perilous atmosphere developed when scores of black and Spanish-speaking residents of the nearby Columbia Point housing project congregated on the beach. Leaders declared they were asserting their right to use the beach without harassment. Some South Boston community spokesman described their presence as a deliberate attempt to provoke an incident related to civil rights. A white group gathered and a shouting match and racial slurs ensued. A line of police separated the factions and violence was averted.

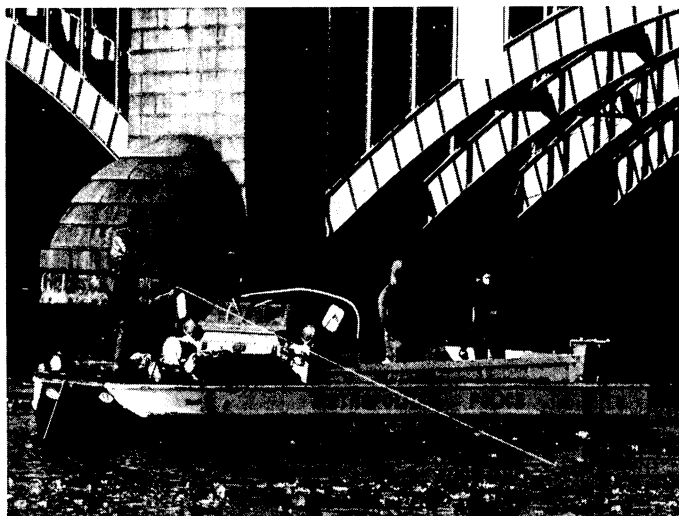
The scene was reenacted in many additional confrontations and sporadic skirmishes during the next two weeks, marked by stone-throwing, scattered physical encounters and verbal harassment. At times, the explosive situation was controlled by police lines separating the two groups or clearing the beach of trouble-makers.

By time confrontations tapered off two weeks later, more than 50 arrests had piled up, including two blacks, on charges of assault on police, refusing to obey police orders or being disorderly persons. Several minor injuries had been reported but no crowd violence had occurred. At times the presence of Metropolitan Police rose to 200 riot-equipped men, including mounted police, motorcycle officers and boats, backed up by a large reserve of Boston officers. FBI agents appeared on the scene as observers. Top state and city officials expressed concern and deplored "trouble-makers." MDC conferences with both sides helped to smooth antagonisms while remaining firmly behind beach rights for all people.

Finally, the situation was cooled by the pressure of official voices, public opinion and a meeting of two South Boston community organizations, where leaders called for avoidance of confrontations.

The principle of "a beach open to all" had been reaffirmed.

Meanwhile, the future of the Metropolitan District Police as a separate force has been assured through a decision by Governor Michael Dukakis rejecting a management task force's recommendation to shift functions to other law enforcement



Jack Maley, MDC

METROPOLITAN POLICE IN ACTION illustrates some of its diversified functions. From left to right: Coping with a racial crisis at Carson Beach, South Boston, police lines keep apart factions to avoid threat of violence. Tow truck in MDC's motorist aid patrol and police unit team up to expedite removal of disabled vehicle and minimize traffic tieup. Underwater recovery unit in search of Charles River that yielded gun used in Somerville homicide. Police go to the rescue of boys drifting on ice floes off Morrissey Boulevard.

agencies, primarily at the municipal level, as an economy measure. The change, however, would have imposed a financial burden on local taxpayers in the Parks District, for 67% of MDC Police costs is paid from the state highway fund and only 33% by the district's municipalities.

Simultaneously, a public safety council was established by executive order for improved coordination among MDC and other law enforcement agencies. Steps also have been taken in establishing concurrent jurisdiction with local departments in certain MDC areas.

Beefing up police strength has now begun following a job freeze in recent years which diminished personnel about 150 below the 655 authorized positions. The force has been bolstered by 19 new officers. A recruit class of 39 is scheduled for next year. Additionally, officers have been relieved for other duties by authorization to increase part-time school-crossing guards from 23 to 53 and employment of 10 women clerks at headquarters. In selecting new officers, the screening process has been upgraded by adoption of professional psychological testing.

Mounting problems in protecting MDC reservoirs and watershed areas in Central Massachusetts against trespassers, swimmers and other hazards to water supply have led to plans for a permanent detachment of 11 officers in Clinton at Wachusett Reservoir, effective July 15, 1977. Besides patrol duties covering MDC property in 10 communities, officers will respond to calls for assistance from local departments as a "good neighbor" gesture. The unit is similar to one estab-



Boston Globe

lished many years ago at Quabbin Reservoir, MDC's principal water supply source. Bomb threats prior to President Carter's March 16 visit to Clinton led to heavy MDC Police security at Wachusett Reservoir and its dam, utilizing boats and helicopters. Trespassing offenses have kept police busy also at the Chestnut Hill and Spot Pond distribution reservoirs near Boston.

New techniques for sharpening police operations are continuing. A defensive driving course has been established for recruits and as part of the in-service training program for veteran officers. Participation in a staged mock bus disaster has provided expertise in coping with such emergencies. For motorcycle officers a highly-sophisticated small radar gun has been adopted to provide an instant reading of vehicle speed.

At MDC's Police Academy, in-service training during the past year has stressed upgrading of "first responder" medical skills, such as cardio-pulmonary resuscitation. A stringent new law requiring costly equipment and high-y-advanced training of personnel has resulted in a phase-out of ambulance service. As an effective substitute, agreements have been made with qualified private and municipal ambulance services to cover departmental jurisdiction. MDC vehicles are being used only in cases of minor injuries or illness or when no other ambulance is available or in the event of a catastrophe in which sufficient certified ambulances are unavailable.

In its first full year's operation, a motorist aid program designed to alleviate traffic tieups has recorded 4751 responses by emergency units on a 7½-mile stretch of Central Artery

It Was One of Those Years For Testing Police Versatility

There's no lack of off-beat demands testing the versatility of Metropolitan District Police, and the past year was no exception.

Two men spotted digging contaminated clams in a restricted Weymouth area touched off a chase that finally involved the plane normally used by Metropolitan Police for traffic observation, a police boat and a cruiser crew. The pair was finally apprehended after fleeing through clam flats, by boat through Hingham Bay and eventually to Peddocks Island.

In another pursuit, MDC and Coast Guard boats teamed up to capture three men in a bullet-punctuated chase in Boston Harbor, following a report that the trio had fired at a commuter boat near Kelly's Landing in South Boston. MDC Police also manned their amphibious craft in a major storm to patrol storm-flooded roadways on the North Shore and South Shore. And then there was the hot summer day when the contents of a large meat truck were in danger of spoiling, following a collision on the Southeast Expressway. Emergency police action produced a load of dry ice and saved the cargo.

and Southeast Expressway. The system combines police aerial observation for prompt spotting of disabled cars and accidents with use of two radio-equipped tow trucks operated by MDC's Central Services Division, heavy-duty police cruisers fitted with push-bars and motorcycle officers. For truck breakdowns heavy tow equipment is available. The expressway units operate during peak traffic hours between 6:30 and 9:30 A.M. and 3:30 and 6:30 P.M. MDC has police jurisdiction over the area, while the State Department of Public Works is responsible for maintenance.

Expressway traffic control was complicated during the summer by reconstruction of the Massachusetts Avenue interchange and elevated south-bound lanes in the vicinity. In effect, also, during morning peak hours was an express lane northbound on the Southeast Expressway, between the Braintree-Quincy line and intown Boston, exclusively for buses and cars with three or more passengers.

The traditional role of providing assistance to other police agencies was extended to training officers and dogs from five communities in a 14-week program by MDC's K-9 unit, as well as "keep-sharp" retraining for teams from five other cities and towns. Other forms of aid were furnished on 1544 occasions during the year, including a number of local emergencies such as large-scale disturbances at youth gatherings, racial conflicts at Boston schools, major fires, a labor union clash at a construction site and a rampage by State Prison inmates at a

Superior Court session.

The summer season brought a crackdown on drinking at beaches, mostly during evening hours, netting a record number of arrests for rowdiness and other disturbances involving youthful groups. Supplementary manpower from the highly-mobile Traffic-Oriented Patrol Squad (TOPS) was utilized to deal with the problem and assure orderly conditions for beachgoers.

Expertise of the Detective Unit has been recognized by participation of personnel in four crime-fighting agencies in Metropolitan Boston. Two men have been assigned to a hard-hitting unit in the Suffolk County District Attorney's office, dealing with political corruption, organized crime and white collar criminals. Another has been recruited by the Norfolk County District Attorney for his campaign against white collar crime. The others are working with an interagency force aimed at diversion and illegal sale of drugs by wholesalers, doctors and druggists, described as one of the most successful in the country, and the Metropolitan Enforcement Group's North Shore Unit which has netted numerous arrests for narcotic offenses. The Diversion Unit was involved in an interstate cooperative effort which led to an \$8 million seizure of stolen hard drugs in Rhode Island, one of the biggest in history.

During the fiscal year ending June 30, 1977, Metropolitan District Police investigated 5363 crimes, 2063 of which were relatively serious. Nearly 50% of the crimes were closed by arrests. In the same period, there were 4894 motor vehicle accidents within MDC jurisdiction. Law enforcement and accident prevention efforts piled up 46,736 citations, nearly 20,000 above the preceding year. Police recovered 1256 stolen motor vehicles of which 849 were taken from MDC roadways. Stolen property recovered was valued at nearly \$2.5 million. Assistance was furnished to the general public on 17,833 occasions, as well as 243 responses for aid in delivery of blood or vital medical supplies to area hospitals.

Highly-trained patrol officers on call for specialized duties have been frequently utilized. These men have responded 51 times for scuba underwater recovery assignments and as bomb disposal experts on 13 occasions. Similarly, the K-9 unit filled 33 requests for services.

The popularity of MDC's harbor islands and growing marine traffic in the nearby harbor waters and on the Charles and Mystic rivers continue to require considerable police patrol activity. Visitors voyaging to Georges, Lovell's and Peddocks islands during the 1977 season exceeded 300,000, according to police estimates. Seven officers manning two patrol boats made 3691 trips to the islands, mainly Georges. In addition to normal enforcement duties, the officers performed a great variety of services, including seven persons rescued, 42 search and rescue missions, 92 persons assisted, 23 transported to hospitals, first aid rendered to 542 persons, 26 boats towed, 210 boat inspections and response to eight island fires.

How MDC Organization Delivers Regional Services

The Metropolitan District Commission's concept is based on the belief that communities in Metropolitan Boston can derive greater benefits with more efficiency and lower costs through regional operation of parks, water and sewerage systems.

It has become increasingly evident that many facets of urban life and the environment can be developed and administered most effectively without regard for municipal boundaries.

This trend originated in 1889 with the creation of the Metropolitan Sewerage Commission as the nation's first legally-constituted metropolitan district. Then came the Metropolitan Parks District in 1893 and the Metropolitan Water Board in 1895. The three agencies were consolidated into the Metropolitan District Commission in 1919 for greater efficiency and economy.

MDC operations are governed by a five-member Commission. A Commissioner named by the Secretary of Environmental Affairs, subject to the Governor's approval, serves as full-time executive and administrative head of the agency. Four part-time Associate Commissioners appointed by the Governor join the Commissioner at weekly meetings in setting policy, approving contracts and participating in decisions on departmental operations. The Commissioner and Associate Commissioners each have an equal vote, except that "concurrence of the Commissioner and of not less than two Associate Commissioners shall be required for the execution of contracts and of such other official actions of the Commission as may be required by law."

The Reorganization Act of 1969 establishing a cabinet system placed MDC under the jurisdiction of the Executive Office of Environmental Affairs.

As a department of the Commonwealth of Massachusetts, MDC is under the jurisdiction of the Governor and Legislature, including approval of its operations budget and bond issues for capital construction.

To keep cities and towns informed about activities, public hearings are required annually for municipal officials in the Parks, Sewerage and Water Districts regarding improvements, extensions, new facilities and financial data.

Departmental operations are performed by seven divisions: Engineering, Sewerage, Water, Parks, Police, Environmental Planning and Environmental Quality. These divisions report to the department's Chief Engineer.

The organizational structure includes five administrative or staff units: Commission Secretary, General Counsel, Commissioner's Office, Special Projects and Central Services.

Major support services are assigned to the Central Services Division. These include purchase and maintenance of motorized equipment, bulk purchase of supplies, sign production, maintenance of MDC headquarters building, police stations and Commission-owned homes and acquiring special

Personnel Evaluation System Aims at Better Performance

Groundwork has been laid for a sophisticated personnel evaluation system aimed at improving employee efficiency and sharpening managerial level techniques.

Plans call for computerizing semi-annual performance records as a basis for promotions, annual salary increments, reassignment, discipline and discharge. Initial phases of the program have identified cases of absenteeism, poor work performance and under-utilization, as well as potential problem areas. In-service training of MDC managerial employees in basic management, goal-setting, motivation and optimum use of personnel evaluations is scheduled for the coming year.

It is anticipated that MDC's personnel system will become a positive model for other state agencies in upgrading personnel standards.

equipment for emergency operations. Central Services crews operate two tow trucks for prompt removal of disabled vehicles from the Central and Southeast expressways to minimize traffic backup during peak hours. An additional tow truck and two road service vans are available for further emergency use. An extra-heavy-duty tow truck is on standby for handling large trucks and removing vehicles from waterways.

An in-house Project Analysis Board reviews proposed projects and submits recommendations to the Commission. A Land Board, another in-house unit, establishes priorities for land acquisition and recommends action on land use, sales, parks development and related matters.

All legal aspects of the agency's functions are supervised by the Office of General Counsel, such as drafting legal opinions, contracts, proposed legislation, directives and rules and regulations, dealing with public bidding procedure, conducting or participating in quasi-judicial hearings in the areas of personnel, labor relations and police administration, and advising the Commission on various questions of law.

The legal process of land takings, easements and conveyances is performed by the Right of Way Section for recreational, flood control sewerage and water supply purposes. Permits, easements, deeds and other types of instruments are also processed, along with maintaining and updating a land inventory. The section has an enforcement unit which deals with encroachment on MDC lands, pollution of rivers and streams and other similar violations.

A Planning Section is primarily concerned with park and

recreational development, roadway system improvements, landscaping and open space acquisition.

The Financial Office operates a data-processing unit for payroll and other departmental uses, processes all receipts and disbursements, maintains fiscal records and serves as the department's accounting office.

Interviews and job placement functions are handled by a Personnel Office, which also negotiates collective bargaining agreements, maintains personnel records, co-ordinates enrollment in training courses and conducts an alcoholic rehabilitation program.

A reference library serves as a source of historical data, publications, reports and other information.

OPERATING DIVISIONS

ENGINEERING

The Engineering Division is responsible for planning, engineering and supervising construction of most facilities required by the Water and Sewerage divisions, flood control and drainage and major Parks District projects. The division's chief construction engineer also has administrative management and engineering oversight of the Parks Engineering Section, which was formerly a separate division. Completed facilities are turned over to operating divisions for maintenance and operation.

Nineteen contracts amounting to \$13.9 million were awarded during fiscal 1977. Work was still in progress or contracts were completed totaling \$21.8 million for 16 projects begun in prior years. Additionally, work was in progress on the new Charles River Dam under a \$35 million contract in cooperation with the Army Corps of Engineers which is supervising the project.

Personnel in the Parks Engineering Section are engaged in various Parks District projects involving designing, engineering services, contract document preparation and supervision of new construction, as well as major repairs of park and recreation facilities, roadways, bridges, drawbridges and locks, street lighting and traffic controls. Upon completion, new facilities come under the jurisdiction of the Parks Division for operation and routine maintenance. Twenty-three contracts were awarded for Parks District work during the fiscal year totaling \$3.4 million. There were 17 additional contracts previously awarded and still active or completed in fiscal 1977, amounting to \$5.9 million.

Other Engineering Division activities consist of land surveys, hydraulic investigations of water and sewer lines; river hydraulics, materials testing, water and sewage analysis, photographic work and aerial photography, architectural services, landscaping, park and recreational developments; legal assistance, preparation of contracts, review and selection of

consultant submittals, and participation on committees for land acquisition, solid waste, water resources, environmental impacts, water quality and project analyses.

WATER

The purpose of the Water Division is to furnish pure water to local distribution systems of communities in the Metropolitan Water District and such other cities and towns as can be reasonably supplied.

Twenty-five communities receive their entire water supply and seven a partial supply, with an area of 309 square miles and 1,836,240 population. The City of Woburn (pop. 35,330) was admitted as the 33rd member in 1972 as a partial user, but will not be linked to the system until completion of a new pipeline and pumping facilities. The Town of Wellesley (pop. 26,590), which became the 34th member in 1974, has a "readiness to serve" agreement and plans to rely on its own supply for the present. Ten communities in Central Massachusetts located near MDC reservoirs and aqueducts are supplied in whole or in part under special agreements.

The Water District's sources are the Quabbin, Wachusett and Sudbury watersheds and the runoff of the Ware River watershed during certain periods. Storage reservoirs on these watersheds have a capacity of 495 billion gallons, principally at Quabbin Reservoir with its capacity of 412 billion gallons and Wachusett's 67 billion gallons.

The water supply is delivered to Metropolitan Boston through 131 miles of aqueducts and tunnels and distributed via approximately 260 miles of pipelines, mostly by gravity flow.

Facilities under control of the Water Division include six storage reservoirs with 467 square miles of tributary watershed, a water surface of 30,000 acres, four hydro-electric power stations, 16 miles of high tension power transmission lines, 12 distribution pumping stations to service high elevations and 16 distribution reservoirs with a capacity of 3.1 billion gallons.

Five contracts for construction work, maintenance or repairs were awarded during fiscal 1977 for a total of \$241,146. Work was still in progress on three contracts awarded in 1976 totaling \$1,471,851.

SEWERAGE

An intricate sewerage and treatment system is under the jurisdiction of the Sewerage Division. Its vast sewage collection and pollution abatement functions require maintenance and operation of 10 pumping stations, two treatment plants, four pre-treatment headworks, a detention and chlorination station for combined stormwater and sewage overflows along Charles River Basin and 226 miles of trunk sewers.

Forty-three cities and towns covering 406 square miles,

with 2,180,074 inhabitants and a contributing population of 1,998,540, are members of the Sewerage District. Wastewater flows through 5181 miles of local sewers connected to MDC trunk lines at 1814 locations, an increase of 35 miles over the previous year. The municipal lines link 403,788 individual connections with the MDC system, an increase of 3094 in the past year. Per capita cost of sewerage operations in 1977 was \$9.39 of which \$5.54 was for maintenance and operations and \$3.85 for debt service.

Average daily sewage load was 440 million gallons and the 24-hour maximum flow was 819 mgd passing through primary treatment and chlorination at Deer Island and Nut Island plants before discharge via outfalls into outer Boston Harbor. The process provides screening and grit removal, pre-chlorination, pre-aeration, primary sedimentation and post chlorination. Raw sludge is treated by thickening and high rate digestion prior to discharge, producing a by-product of methane gas utilized for electrical power and heating.

There were 26 contracts awarded by the division or in force during fiscal 1977 totaling \$2.5 million, including \$1.6 million for inflow/infiltration studies related to the Deer Island and Nut Island service areas and three sewer relief line projects.

PARKS-RECREATION

The Parks and Recreation Division is responsible for maintenance of extensive Parks District property and supervising recreation programs for the benefit of 37 cities and towns and a population of 1,984,940 within the district.

Under its jurisdiction are nearly 15,000 acres of parkland, including five major reservations and 17 miles of beaches, 26 skating rinks, 19 swimming pools, three 18-hole golf courses, three harbor islands, the Charles, Mystic and Neponset rivers within the District, 168 miles of roadway and a wide variety of other recreation facilities and parks.

Its Recreation Services Section develops, schedules and oversees recreational use of facilities, such as rinks, pools, Hatch Shell, stadiums, athletic fields, golf courses, special events and miscellaneous recreational activity.

The division also operates locks and drawbridges and has administrative and maintenance responsibility for the Franklin Park and Stone zoological parks.

POLICE

Primary mission of the Police Division is protection of MDC property and people using its facilities and patrol of 168 miles of MDC roadways and 18 miles of the Northeast, Southeast and Central Artery expressways within Suffolk County, which are maintained by the State Department of Public Works. The division also has full police powers in any community where MDC has property.

Its broad responsibility for law enforcement at parklands, waterways, harbor islands and roadways requires highly diversified functions and equipment. Daily use of a K-9 unit, detectives, narcotics officers, mounted police and boat officers enables the force to patrol a widespread and diversified environment. Patrol officers with specialized capabilities, such as scuba diving and bomb disposal, are often called from their regular duties to perform these hazardous functions. Special equipment, such as breathalyzers, radar, underwater communications and police boats are used regularly by MDC officers.

A Traffic Oriented Patrol Squad (TOPS) deals primarily with enforcement at high accident locations and top priority traffic problems. TOPS functions also as an effective mobile force for quick response to serious emergencies anywhere in Metropolitan Boston. Aerial surveillance of the traffic scene is in effect during weekday peak hours, utilizing a plane furnished by a local radio station. The flying policeman provides radio broadcasts on traffic conditions to the public and informs police headquarters about disabled vehicles, accidents and tieups as a method of expediting response and easing traffic congestion.

ENVIRONMENTAL PLANNING

Responsibility for a wide range of environmental concerns has been assigned to the Environmental Planning Division. The agency administers the Federal and State Environmental Policy Acts for MDC, such as preparation of environmental impact reports and assessments and review of similar reports by other agencies affecting MDC facilities. It also has prime responsibility for water and wastewater planning and program implementation. Other services include representing MDC on Federal, State and regional committees, land use planning, assistance on regulatory permit procedures and consultant contract administration and management.

The division coordinated and managed the newly-completed wastewater study for the Eastern Massachusetts Metropolitan Area in conjunction with Army Corps of Engineers. Study recommendations for pollution control facilities totaling \$855 million are now being implemented by this division.

ENVIRONMENTAL QUALITY

Specialized services dealing with environmental problems affecting the air, land and water are furnished by the Environmental Quality Division. Its primary functions are developing and managing projects designed to protect and improve the environmental quality of the areas under MDC jurisdiction, monitoring water quality of rivers, beaches and swimming pools and advising MDC on matters affecting the environment.

Assessments Primary Source of MDC Financing

As a regional public agency, the Metropolitan District Commission is financed primarily by assessments on 54 communities which are members of one or more of its three districts.

Additional funds come from the State Highway Fund, state allocations for certain flood control projects and miscellaneous revenue such as fees, rentals, licenses, permits, fines, penalties, sales and Federal reimbursements or grants.

The operating budget and bond issues for capital construction are subject to approval by the Governor and Legislature.

Principal financing sources for the three districts are the following:

PARKS — Recreational capital construction by bond issues, amortized by assessments based on property tax valuations of communities in the district; maintenance of boulevards and reservations and police costs by 67% from the State Highway Fund and 33% by member cities and towns, with one-third based on population and two-thirds on valuation; highway and bridge construction by legislative allocations from state highway bond issues.

WATER — Charge of \$240 per million gallons, with special provisions for communities outside the Water District.

SEWERAGE — Debt requirements are assessed on the basis of total population and a "population equivalent" formula for contributing industries, commercial establishments and other uses, which became effective July 1, 1976. This replaced previous assessments based on capacity of municipal sewers connected to the MDC sewerage system. Maintenance and operation expenses are apportioned in relation to residential population actually served by the system and a "population equivalent" charge for industries, etc. This method was substituted July 1, 1977 for an apportionment based on total population.

For the fiscal year ending June 30, 1977, the Commission spent \$50,528,196 on maintenance and operations, an increase of \$3,032,049 over 1976. Interest and principal payments on bonds issued for capital projects and water fund deficits amounted to \$26,686,971, a decrease of \$125,756 below 1976. The combined expenditure was \$77,215,167, a rise of \$2,906,293 over the previous year.

An additional \$4,111,369 was expended for highway construction from state highway bond funds and for certain flood control projects from special authorizations, which do not reflect in assessments on MDC cities and towns.

The \$81,326,536 total represented 62% for maintenance and operations, 33% for MDC bonded debt and 5% for expenditures from state bond funds.

EXPENDITURES

	1977		1976	
	Operations	Debt	Operations	Debt
Administration	\$ 883,078		\$ 810,777	
*Parks	28,081,180	\$ 7,286,367	26,567,600	\$ 7,275,634
Sewerage	10,619,043	7,627,624	10,613,821	7,612,727
Water	10,944,895	11,772,980	9,503,949	11,924,366
	\$50,528,196	\$26,686,971	\$47,496,147	\$26,812,727
Total		\$77,215,167		\$74,308,874

*Includes cost of MDC Police operations.

Note — An additional \$4,111,369 was spent in 1977 and \$3,014,602 in 1976 for highway construction projects financed by state highway bond issues and flood control and other special authorizations financed by state General Fund bond issues rather than assessments on MDC cities and towns.

PRINCIPAL INCOME SOURCES

	1977	1976	
Parks	\$14,847,162	\$16,767,827	37 Cities & Towns
Sewerage	17,806,090	18,881,306	43 Cities & Towns
Water	24,536,089	24,144,492	32 Cities & Towns
State Highway Fund	18,814,391	17,600,292	
Revenue	4,445,259	3,280,254	Admissions, Sales, Fees, etc
Total	\$80,048,991	\$80,674,171	

Note: Income figures for Parks, Sewerage and Water differ slightly from assessment table, due to various adjustments. Sale of power, licenses, fees, concession permits, etc., do not accrue to the Commission for re-use, but rather flow directly into the appropriate fund and thereby reduces assessments against cities and towns. Federal reimbursements ordinarily have the same effect.

OUTSTANDING DEBT, JUNE 30 (In millions of dollars)

	Sewage	*Water	Parks	Total
1977	\$ 86.342	\$ 126.257	\$ 52.941	\$ 265.547
1976	85.671	130.998	50.843	267.512
1975	89.993	137.739	55.650	283.382
1974	87.047	132.646	41.481	261.174
1973	91.301	130.268	39.997	261.566

*Includes Water Fund deficit debt.

TOTAL PERMANENT AND TEMPORARY EMPLOYEES AS OF JUNE 30

	1977			1976			1975		
	Perm.	Temp.	Total	Perm.	Temp.	Total	Perm.	Temp.	Total
Administration	51	-	51	54	1	55	54	1	55
Engineering	227	-	227	238	-	238	258	-	258
Highway Engineering	-	33	33	-	37	37	-	39	39
Parks & Parks Eng.	653	1062	1715	600	1157	1757	684	1120	1804
Police	464	25	489	475	29	504	516	26	542
Sewerage	448	-	448	430	-	430	437	1	438
Water	488	5	493	481	10	491	509	13	522
Total	2331	1125	3456	2278	1234	3512	2458	1200	3658

PERSONNEL EXPENDITURES*

	1977	1976	1975
Administration	\$ 616,390	\$ 578,773	\$ 600,493
Engineering	3,726,966	3,652,800	3,622,717
Highway Eng.	446,073	440,217	478,024
Parks & Parks Eng.	12,403,196	10,852,030	9,829,974
Police	7,013,590	8,500,170	9,008,097
Sewerage	5,320,912	4,928,592	4,958,568
Water	5,186,141	4,973,306	5,301,464
Total	\$34,713,268	\$33,925,888	\$33,799,337

*Includes permanent, temporary and seasonal employees as of June 30.

TOTAL ASSESSMENTS FOR METROPOLITAN DISTRICTS FOR 1976*

<i>Cities and Towns</i>	<i>Metropolitan Water</i>	<i>Metropolitan Parks and Boulevards</i>	<i>Metropolitan Sewerage System</i>	<i>Total</i>
Arlington	\$ 476,957.04	\$ 447,070.46	\$ 398,887.21	\$ 1,322,914.71
Ashland			80,193.48	80,193.48
Bedford			99,639.78	99,639.78
Belmont	248,382.96	318,180.48	232,944.16	799,507.60
Boston	12,888,419.04	2,760,741.27	5,230,848.55	20,880,008.86
Braintree		403,909.32	293,317.43	697,226.75
Brookline	645,967.44	596,850.85	422,128.15	1,664,946.44
Burlington			194,960.16	194,960.16
Cambridge	99,995.76	756,375.12	921,335.62	1,777,706.50
Canton	53,589.60	206,932.86	156,663.05	417,185.51
Chelsea	306,371.04	122,513.37	206,958.57	635,842.98
Cohasset		3,508.82		3,508.82
Dedham		298,538.09	217,000.21	515,538.30
Dover		81,215.92		81,215.92
Everett	677,613.36	443,691.43	336,506.90	1,457,811.69
Framingham			533,223.78	533,223.78
Hingham		202,524.81	52,056.60	254,581.41
Hull		82,474.53		82,474.53
Lexington	392,832.96		259,393.32	652,226.28
Lynn		535,674.09		535,674.09
Lynnfield Water District	34,949.76			34,949.76
Malden	606,356.16	422,176.64	445,364.97	1,473,897.77
Marblehead	210,551.52	123,456.78		210,551.52
Medford	755,648.64	44,312.06	484,031.01	1,680,991.71
Melrose	296,015.52	26,494.46	255,849.06	813,359.04
Milton	211,492.32	282,158.18	217,014.72	710,665.22
Nahant	36,797.04	41,293.32		78,090.36
Natick			252,011.71	252,011.71
Needham	88,181.04	394,714.68	239,967.69	722,863.41
Newton	1,160,895.12	955,791.12	712,197.05	2,828,883.29
Norwood	357,348.00		256,543.03	613,891.03
Peabody	102,054.24			102,054.24
Quincy	956,084.16	727,324.52	735,824.36	2,419,233.04
Randolph			232,792.70	232,792.70
Reading			188,197.53	188,197.53
Revere	374,610.24	313,291.77	327,956.23	1,015,858.24
Saugus	234,918.00	243,621.44		478,539.44
Somerville	803,154.96	450,465.38	647,377.43	1,900,997.77
Stoneham	275,654.88	197,762.11	171,262.13	644,679.12
Stoughton			204,248.49	204,248.49
Swampscott	159,193.68	87,164.87		246,358.55
Wakefield	207,604.80	234,010.12	206,818.63	648,433.55
Walpole			215,107.11	215,107.11
Waltham	979,209.84	589,133.75	501,151.48	2,069,495.07
Watertown	422,033.28	307,304.29	295,101.73	1,024,439.30
Wellesley		369,551.97	211,203.09	580,755.06
Weston	102,205.92	205,512.28		307,718.20
Westwood		185,561.95	111,345.76	296,907.71
Weymouth		480,516.61	451,546.25	932,062.86
Wilmington			147,029.03	147,029.03
Winchester	95,305.44	250,880.48	189,448.98	535,634.90
Winthrop	174,988.32	145,918.74	161,694.85	482,601.91
Woburn			308,948.10	308,948.10
	\$24,435,382.08	\$14,847,162.16	\$17,806,090.09	\$57,088,634.33

*Note: Assessments for 1976 were received in fiscal 1977.

City of Cambridge

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Annual Report of the Metropolitan District Commission for the Fiscal Year Ending 6/30/77.

In City Council,

December 4, 1978

12/4/78
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