

City of Cambridge

In City Council..... February 12, 1979.....

The City Council *Committee* on Finance

met on January 24, 1979 to discuss the Capital Improvement Program for the Water Department ~~to which~~ and the implementation of improvements at the Fresh Pond Reservation. In attendance were Public Works Commissioner Conrad Fagone, Water Superintendent John Seites, Assistant City Manager Robert Healy, Assistant City Manager David Vickery, Peter Hahn of the Community Development Department, Ruth Birkhoff of the Water Board and two members from the Cambridge Plant and Garden Club.

It was established that the top priority of the Water Department is the covering of Payson Park, which is a storage facility for treated water before the water is injected into the system. Presently the facility consists of two exposed sections. Atmospheric pollution, such as birds and leaves, couple with vandalism, real and potential, to produce a situation where federal and state ~~reports~~ **Reports** quality standards are violated. Discussion focused on the type of cover to be employed as well as the financing of the project. Solutions included a concrete cover with the possibility of community use on top of the surface or some sort of rubber, balloon-type structure or even some sort of floating inflatable mechanism. Commissioner Fagone stated that the latter two solutions would be cheaper and they were being pursued. Financing of the project would entail issuing bonds with the bonds being paid off by proceeds from the recently increased water rates.

An accompanying project is the modification of equipment at the treatment plant. This would include upgrading of pumps, the sludge disposal operation and the treatment for manganese and sodium. Financing of this project would also require the issuance of bonds with the proceeds of the increased water rates amortizing the bonds. The total cost of

both of these capital improvements is estimated at \$3.8 million with a yearly outlay from Water Department revenues of approximately \$300,000.

Another important area discussed included the upgrading of the smaller water mains so that throughout the city the minimum size will be 8" (inches). Some sections of the city remain serviced by 6" mains which over time have probably had their flow capacity reduced well below the 6". In conjunction with the improved capacity of the smaller mains, other mains will be cleaned and lined. The ongoing program of cleaning and lining had been abandoned in the early 1970's. The Council was told that these improvements will increase water pressure and probably reduce the incidence of "dirty water". Two particular occurrences were reported that relate to the "dirty water" problem. First, Commissioner Fagone stated that the P.W.D. street sweepers stir up the "dirty water" by opening the hydrant completely when a less forceful pressure would suffice. Second, Superintendent Seites stated that the annual testing of fire hydrants could be adjusted such that a lower water force was used and, therefore, a lower incidence of "dirty water". Mr. Seites informed the Council that the testing should only focus on the availability of water and drainage, not the pressure. This problem should be coordinated with the Fire Department and its needs.

A final area discussed involves the implementation of the Fresh Pond Reservation Task Force. David Vickery reported that the "Pond" proposals would be phased in with \$100,000 from the increased water rates used in the fiscal year commencing July 1, 1979. Any proposal will be considered during the budget hearings this spring and the full Council will be passing on the particular portion of the total package. Most of the first year improvements will focus on the immediate area surrounding Kingsley Park and the Water Works building.

The Committee also wants to acknowledge the financial contribution of the Cambridge Plant and Garden Club as well as their continued interest in the City's appearance generally and the Reservation in particular.

For the Committee,
Councillor Kevin Crane
Chairman



CITY OF CAMBRIDGE
INTEROFFICE CORRESPONDENCE

To James L. Sullivan, City Manager **Date** Dec. 11, 1978

From J. H. Seites, Supt. Water Dept. *J. H. Seites* **Reference**
Via: C. Fagone, Comm. Public Works Dept.

Subject COUNCIL ORDER RE: DETAILED ANALYSIS OF
NEEDS OF WATER DEPARTMENT

A basis for needs is past, current and required reports for the Engineering and Public Health aspects of Water Supply and the Land Utilization aspects of Hobbs Brook, Stony Brook and Fresh Pond, current and proposed Federal and State Rules and Regulations and Water Department information (enclosure 1).

In addition, needs are based on my experience in daily operation and management with specific attention being paid to the complaints of water users. Complaints have been recorded since September 16, 1977 and are investigated for cause. Corrective action has been taken wherever possible with the current physical plant and assets. Further action on this basis is considered minimal, if non existant.

The above has determined the objectives, deficiencies, priorities and critics (enclosure 2) which is the basis for the summary of needs (enclosure 3). Cost estimates in some cases are preliminary or subject to selection of alternative methods based on cost and the ultimate goal to provide clean water at the tap and adequate Fire Flows. Problems not controlled by the Water Department are outlined. (enclosure 4)

In order to implement this work at an early date it is necessary to have planning funds available at this time to further study solutions and prepare documents for execution.

Accordingly, \$75,000 is requested as a supplemental appropriation at this time.

REFERENCES

1. REPORT ON NEEDED IMPROVEMENTS TO THE CAMBRIDGE WATER SYSTEM
CAMP DRESSER & McKEE INC.- JULY 1970

THIS REPORT OUTLINED A LONG-TERM CAPITAL IMPROVEMENT PROGRAM FOR THE CAMBRIDGE WATER SYSTEM INCLUDING IMPROVEMENTS TO THE DISTRIBUTION SYSTEM, WATER TREATMENT PLANT, PAYSON PARK RESERVOIR, AND THE WATER SUPPLY RESERVOIRS.

2. WATER TREATMENT PLANT SLUDGE DISPOSAL - LETTER REPORT
CAMP DRESSER & McKEE INC. - FEBRUARY 1977

THIS LETTER REPORT OUTLINED SOME OF THE AVAILABLE ALTERNATIVES FOR DISPOSING THE FILTER BACKWASH WATER AND SEDIMENTATION BASIN SLUDGE FROM THE WATER TREATMENT PLANT. A DETAILED REPORT ON THIS SUBJECT IS NOW IN PROGRESS AND IS SCHEDULED FOR COMPLETION IN JANUARY OF 1979.

3. EVALUATION OF ELECTRICAL, MECHANICAL AND CHEMICAL SYSTEMS AT THE
CAMBRIDGE WATER TREATMENT PLANT - CDM DECEMBER 1977

THIS REPORT EVALUATED THE OPERATING CONDITION OF THE EXISTING TREATMENT UNITS AND RELATED EQUIPMENT SYSTEMS AT THE WATER TREATMENT PLANT. SPECIFIC RECOMMENDATIONS WERE MADE FOR IMPROVING OR REPLACING SEVERAL OF THESE EQUIPMENT SYSTEMS.

4. PAYSON PARK RESERVOIR STUDY
CAMP DRESSER & McKEE INC. - JULY 1978

THIS REPORT INVESTIGATED THE CONTINUED UTILIZATION OF THE CITY'S UNCOVERED FINISHED-WATER RESERVOIR LOCATED IN BELMONT. SEVERAL ALTERNATIVE METHODS OF COVERING THE RESERVOIR WERE EVALUATED TO DETERMINE A COST-EFFECTIVE SYSTEM OF COVERING THE RESERVOIR AND COMPLYING WITH THE "DRINKING WATER REGULATIONS OF MASSACHUSETTS", WHICH REQUIRE THE COVERING THE OPEN DISTRIBUTION-STORAGE RESERVOIRS.

5. CAMBRIDGE WATER QUALITY INVESTIGATION
CAMP DRESSER & McKEE INC. - AUGUST 1978

THIS REPORT IS A COMPIATION OF RAW AND FINISHED WATER QUALITY.

6. HOBBS BROOK AND STONY BROOK RESERVATIONS STUDY

TOWNSCAPE ASSOCIATES IEP, INC. - JUNE 1976

THIS REPORT INVESTIGATES OTHER THAN WATER SUPPLY USES.

7. FRESH POND RESERVATION MASTER PLAN

ROY MANN ASSOCIATES, INC. - 1978

THIS PLAN WAS DEVELOPED FOR THE FRESH POND TASK FORCE AS A BASIS FOR UTILIZATION OF FRESH POND LAND.

8. CAMP DRESSER & McKEE INTERNAL MEMORANDUM DATED DEC. 5, 1978

REVIEW OF CHEMICAL TREATMENT NECESSARY FOR MANGANESE REMOVAL AND SODIUM REDUCTION.

9. FEDERAL REGULATIONS

REGULATIONS ADOPTED JUNE 24, 1977 AS A RESULT OF SAFE DRINKING WATER ACT.

10. STATE REGULATIONS

REGULATIONS ADOPTED JUNE 24, 1977 TO IMPLEMENT FEDERAL ACTS.

11. FIRE FLOW REPORTS

THIS IS A COMPILATION OF FIRE HYDRANT FLOW TESTING. REPORTS BY LOCATION.

12. COMPLAINT REPORTS

THIS IS A LOG OF COMPLAINTS BY LOCATION, MONTHLY SUMMARIES AND PLOTTING OF COMPLAINTS ON SYSTEM PLANS.

13. DATA ON CURRENT PHYSICAL PLANT

THIS IS A COMBINATION OF RECORD CARDS, BOOKS AND PLANS THAT INDICATE CURRENT PHYSICAL PLANT AND EQUIPMENT AGE AND MANUFACTURE.

DEC. 4, 1978

THE CAMBRIDGE WATER DEPARTMENT

* OBJECTIVES

* DEFICIENCIES

* PRIORITIES

* CRITICS

ENCLOSURE 2

PAGE 1 OF 4

OBJECTIVES

CLEAN WATER TO CUSTOMERS SATISFACTION
CLEAN WATER TO FEDERAL STANDARDS
CLEAN WATER TO STATE STANDARDS
DISTRIBUTION SYSTEM TO MEET STRUCTURAL REQUIREMENTS OF STATE
INSURE CONTINUANCE OF WATER QUALITY DELIVERED FROM PLANT
INSURE ADEQUATE FIRE FLOW
AVAILABILITY OF RAW WATER
ELIMINATION OF SLUDGE RETURN TO FRESH POND
UPGRADING OF EXISTING FACILITIES
MAINTENANCE OF EXISTING FACILITIES
ACCOUNTABILITY OF WATER
MAXIMUM UTILIZATION OF ASSETS
ADEQUATE STAFF TO INSURE THE ABOVE

DEFICIENCIES Requiring corrective action

RAW WATER QUALITY DEFICIENCIES
SODIUM, MANGANESE
RAW WATER QUANTITY DEFICIENCIES
PUMPAGE FRESH POND TO PLANT
FINISHED WATER QUALITY DEFICIENCIES
OPEN STORAGE RESERVOIR
MDC CONNECTIONS
SEDIMENT DEPOSITS IN TRANSMISSION MAINS
TUBERCULATED DISTRIBUTION MAINS
FINISHED WATER QUANTITY DEFICIENCIES
DEFICIENT FIRE FLOW CAUSED BY
TRANSMISSION LINE ADEQUACY
DISTRIBUTION LINE ADEQUACY
TREATMENT PLANT DEFICIENCIES
SLUDGE DISPOSAL

PRIORITIES

GENERAL PROJECTS

MANGANESE REMOVAL	-----	REVISION OF CHEMICAL TREATMENT
SODIUM REDUCTION	-----	REVISION OF CHEMICAL TREATMENT
PROTECT FINISHED WATER, IMPROVE BACTERIAL CONTROL, MEET STATE STANDARDS	-----	PROTECTION OF FINISHED WATER

TRANSMISSION LINE REVISIONS	-----	TRANSMISSION MAIN REVISIONS
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DISTRIBUTION LINE REVISIONS	-----	CLEANING AND LINING FOR QUANTITY AND QUALITY (ANNOYANCE-DIRTY WATER)
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RAW WATER PUMPAGE	-----	INCREASE FRESH POND PUMPAGE
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SLUDGE DISPOSAL	-----	ALTERNATIVE TO POND DISPOSAL
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PRIORITIES

SPECIFIC PROJECTS

MANGANESE REMOVAL	-----	LIME SYSTEM & ALTERNATIVE COAGULANT
SODIUM REDUCTION	-----	LIME SYSTEM

PROTECTION FINISHED WATER, IMPROVE BACTERIAL CONTROL, MEET STATE STANDARDS	-----	COVER PAYSON PARK
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TRANSMISSION LINE REVISIONS	-----	REVISIONS AT GROVE AND HURON
" "		REVISIONS AT FRESH POND PARKWAY AND LEXINGTON AVE.

DISTRIBUTION LINE REVISIONS	-----	FAYETTE ST., COWPERTHWAITTE ST.
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RAW WATER PUMPAGE	-----	PUMPAGE AT 5' AND 15'
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SLUDGE DISPOSAL	-----	LAGOON; DAM; OTHER
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CRITICS

*CUSTOMER

MANGANESE

NUISANCE DISTURBANCES

CARBONATION IN HOT WATER SYSTEM

SODIUM

*FIRE DEPARTMENT

FIRE FLOWS

*STATE OF MASSACHUSETTS

OPEN DISTRIBUTION RESERVOIR

SODIUM

SLUDGE DISPOSAL

*FEDERAL

SLUDGE DISPOSAL

*WATER DEPARTMENT

RAW WATER SUPPLY

MAINTENANCE OF FACILITIES

ENCLOSURE 2

PAGE 4 OF 4

SUMMARY OF WATER DEPARTMENT NEEDS

WATER QUALITY NEEDS

ADDITIONAL TREATMENT IS REQUIRED TO MEET FEDERAL AND STATE STANDARDS. LOW LIFT PUMPS FROM FRESH POND NEED REPLACEMENT AND SHOULD HAVE INCREASED CAPACITY. THE WASH WATER PUMPS NEED TO BE REPLACED. THE PRESENT FILTERS ARE ADEQUATE FOR ANTICIPATED FUTURE REQUIREMENTS.

STATE REGULATIONS ESTABLISHED IN 1977 REQUIRED COVERING OPEN DISTRIBUTION SYSTEM RESERVOIRS. PAYSON PARK IS SUCH A RESERVOIR AND REQUIRES CLOSE OPERATION SURVEILLANCE PRESCRIBED BY THE STATE. IN ADDITION, THE STATE HAS REQUESTED A DESIGN AND CONSTRUCTION SCHEDULE.

TRANSMISSION AND DISTRIBUTION SYSTEM NEEDS

THE MAJOR LINES OF THE DISTRIBUTION SYSTEM ARE ADEQUATE, HOWEVER, STRENGTHENING, CLEANING, AND ALTERATION IS NEEDED. ACCORDINGLY CLEANING, CLEANING AND LINING OR REPLACEMENT OF MAINS IS REQUIRED. CONTINUED REPLACEMENT OF OBSOLETE AND INADEQUATE FIRE HYDRANTS IS REQUIRED.

RESERVOIRS NEEDS

IN 1978 THE CITY OF CAMBRIDGE UNDERTOOK A STUDY FOR FRESH POND UTILIZATION AND DEVELOPMENT. IN THE PREVIOUS YEARS STUDIES RELATED TO UTILIZATION AND PROTECTION AT HOBBS BROOK AND STONY BROOK RESERVOIRS WERE UNDERTAKEN. IMPLEMENTATION OF THESE PLANS WILL ALLOW MAXIMUM UTILIZATION OF LAND ADJACENT TO RESERVOIRS AND INSURE PROTECTION OF WATER AND WATER STORAGE STRUCTURES.

FUNDING REQUIREMENTS

WITH THE EXCEPTION OF THE COVERING OF PAYSON PARK RESERVOIR AND THE MODIFICATION OF TREATMENT FACILITIES THE RECOMMENDED PROGRAM CAN BE CARRIED OUT ON A PAY-AS-YOU-GO BASIS. THE TWO LARGER PROJECTS COVERING PAYSON PARK RESERVOIR AND THE MODIFICATION OF THE TREATMENT FACILITIES ARE CURRENTLY ESTIMATED TO COST \$3,840,000 AND SHOULD BE FINANCED WITH BONDS.

THE ESTIMATED ANNUAL COST AND PRIORITY OF RECOMMENDED FUNDING IS AS FOLLOWS:

1. INTEREST AND PRINCIPAL PAYMENT FOR COVERING PAYSON PARK \$300,000
RESERVOIR AND TREATMENT PLANT MODIFICATION INCLUDING
SLUDGE DISPOSAL (ATTACHMENT 1).

2. DISTRIBUTION SYSTEM IMPROVEMENTS, INCLUDING CONVERSION 250,000
TO 8" GRID, CLEANING AND LINING AND IMPROVED FIRE
FLOWS, (ATTACHMENT 2).

3. RESERVOIR MAINTENANCE AND IMPROVEMENT. IMPLEMENTATION 100,000
OF FRESH POND MASTER PLAN, INCREASED PROTECTION OF
STONY BROOK AND HOBBS BROOK RESERVOIRS (ATTACHMENT 3).

THIS PROGRAM IS NECESSARY IF CAMBRIDGE IS TO HAVE WATER THAT MEETS CUSTOMER, FEDERAL AND STATE STANDARDS.

WATER QUALITY NEEDS

1. TREATMENT PLANT MODIFICATIONS FOR MANGANESE AND SODIUM	\$ 600,000
2. ENCLOSURE OF PAYSON PARK (FLOATING COVER AND LINER BOTH SIDES)	2,000,000
3. RAW WATER SUPPLY AT FRESH POND	200,000
4. SLUDGE DISPOSAL (MECHANICAL DRYING)	800,000
5. FILTER WASH WATER PUMPS	<u>240,000</u>
TOTAL	\$3,840,000

NOTE:

ITEMS 1 AND 4 ARE PRELIMINARY ESTIMATES.

FURTHER STUDY OF ALTERNATIVE METHODS IS REQUIRED.

ATTACHMENT 1
ENCLOSURE 3

PAGE 3 OF 5

TRANSMISSION AND DISTRIBUTION NEEDS

<u>Location</u>	<u>Sheet Nos.</u>	<u>Test Flow (gpm)</u>	<u>Diam. (in.)</u>	<u>Length (ft.)</u>	<u>Construction Cost (\$)</u>	<u>Comments</u>
1. Fayette Street	C-6	500	12	1,350	65,000	3-family, wood frame houses
2. Walden Street R. R. Bridge	B-3	650	12	1.s.	25,000	existing line cracked and out of service
3. Hancock Street	C-6 D-6	750	12	1,660	80,000	4-story brick apartments
4. Lexington-Fresh Pond Pkwy.	D-3	400	20	250	30,000	additional flow for No. Cambridge
5. Antrim Street	C-6	550	12	1,450	70,000	2-family, wood frame houses
6. DeWolfe/ Cowperthwaite Streets	D-5	600	12 8	670 670	32,000 21,000	2-story, wood frame and Harvard buildings
7. Grove Street	E-2	1,000	16	1.s.	20,000	water quality related
8. Rice Street	B-3	750	12	1,100	53,000	some 2-family; some 3 deckers
9. Aberdeen Avenue	E-3	750	12	1,300	62,000	2-family and single
10. Mass Avenue.	B-4	850	12	1,350	65,000	MBTA related
11. Mass Avenue	A-2	700	10	-----	-----	C & L in 1972, new street surface
12. Fifth Street and Bent Street	B-8	900	8	2,000	64,000	somewhat dependent on East End development
13. Pacific Street	D-7	800	12	700	70,000	Private property under railroad tracks
14. Lowell Street	D-4	900	12	930	45,000	situation relieved with C & L in area
15. Pearl Street	D-7	1,000	16	230	15,000	commercial area
16. Ames Street	C-8	1,000	8	310	10,000	M. I. T.

RESERVOIR NEEDS

- | | |
|--|-----------|
| 1. REPAIRS TO HOBBS BROOK AND STONY BROOK DAMS | \$150,000 |
| 2. SITE IMPROVEMENTS, FRESH POND, HOBBS BROOK AND STONY BROOK. | 500,000 |

PROBLEMS NOT CONTROLLED BY
CAMBRIDGE WATER DEPARTMENT

FIRE FLOW TESTING

A CAUSE OF NUISANCE DISTURBANCE AS WELL AS A RELEASE OF BACTERIA THAT IS ENCLOSED WITHIN THE TUBERCULATION AND ACCUMULATED SEDIMENT DEPOSITS IS THE ANNUAL FIRE FLOW TEST.

WHILE THE ANNUAL TESTING OF HYDRANTS IS REQUIRED TO ENSURE OPERATION, FREE OF OBSTRUCTIONS, AVAILABILITY OF WATER AND ADEQUACY OF DRAINAGE IS NECESSARY, THE DETERMINATION OF FLOW IS NOT.

DETERMINATION ON FIVE (5) YEAR BASIS IS CONCURRED IN OR WHENEVER THERE IS A CHANGE IN THE DISTRIBUTION OR TRANSMISSION SYSTEM ADJACENT TO THE HYDRANT IN QUESTION, REQUESTS BY INSURANCE AGENCIES FOR FIRE INSURANCE RATES, THE INTERNATIONAL SERVICE ORGANIZATION FOR DETERMINATION OF CITY WIDE FIRE RATING WHICH INCLUDE ALL ASPECTS OF FIRE FIGHTING AND RELATES TO ORGANIZATION AND CAPABILITIES OF BOTH THE FIRE AND WATER DEPARTMENTS, OR AS NECESSARY TO DETERMINE WHERE CORRECTIVE ACTION TO THE DISTRIBUTION OR TRANSMISSION SYSTEM IS NECESSARY.

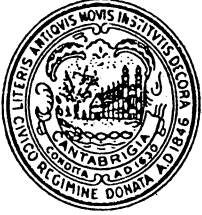
IN 1978 WATER DEPARTMENT PERSONNEL ACCOMPANIED FIRE DEPARTMENT PERSONNEL IN THE TESTING OF FIRE HYDRANTS IN THE CITY. THIS INFORMATION IS HELPFUL AND PROVIDES A BASES FOR FUTURE ACTION, BUT THE RESULTS WILL NOT SIGNIFICANTLY CHANGE OVER A PERIOD OF 5 TO 10 YEARS UNLESS REVISIONS ARE MADE IN THE IMMEDIATE AREA.

STREET SWEEPERS

UTILIZATION OF FIRE HYDRANTS ON THE DISTRIBUTION SYSTEM FOR FILLING OF STREET SWEEPERS HAS BEEN A SOURCE OF CUSTOMER DISATISFACTION AND HAS THE SAME AFFECT AS FIRE FLOW TESTING.

EMERGENCIES

REROUTING OF WATER DUE TO REPAIRS TO HYDRANTS MAINS OR SERVICES OR INCREASED FLOW DUE TO FIRES PRODUCES DIRTY WATER COMPLAINTS. MALFUNCTION OF MDC CONNECTIONS OR USE OF THESE CONNECTIONS PRODUCES DIRTY WATER COMPLAINTS.



CITY OF CAMBRIDGE

CITY HALL, CAMBRIDGE, MASSACHUSETTS 02139 • (617) 876-6800

OFFICE OF
THE CITY CLERK

January 12, 1979

Mr. James L. Sullivan
City Manager
City Hall
Cambridge, Massachusetts

Dear Mr. Sullivan:

At the City Council meeting of January 8, 1979, Agenda Item No. 6 was referred to the Finance Committee for a hearing on motion of Councillor Duehay. At this time, Councillor Crane requested a status report from the City Manager on the Fresh Pond Reservation Plan.

Your cooperation in this matter will be greatly appreciated.

Very truly yours,

Paul E. Healy
City Clerk

PEH/cs



CITY OF CAMBRIDGE

CAMBRIDGE, MASSACHUSETTS 02139
Tel. 498-9011

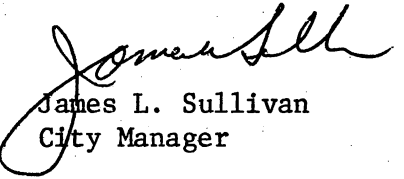
EXECUTIVE DEPARTMENT
JAMES L. SULLIVAN
City Manager

January 8, 1979

To the Honorable, the City Council:

With respect to Awaiting Report Item No. 5 relative to meeting the maintenance, equipment and capital needs of the Water Department, enclosed please find a copy of a report from John H. Seites, Superintendent of the Water Department.

Very truly yours,


James L. Sullivan
City Manager

JLS/mbf
Enc.

E-24

Response to Awaiting Report Item No. 5 re:
meeting the maintenance, equipment and capita
needs of the Water Dept.

In City Council,

January 8, 1979

1/8/1979

To Finance Committee
for Hearing
on Motion of

L. Deakay

L. Crane requested
Status of Fresh Pond
Repair