

FINAL REPORT

McKOWNVILLE WATER DISTRICT ADVISORY COMMITTEE

The Present Water System

When the present water system was planned in 1946 it was designed to provide for at least double the 1,250 population at that time.

At no time since the present system was put into operation in 1949 has there been a shortage of water in the reservoir. Even in periods of extraordinarily heavy use during drouths, water has flown over the spillway. Use of water has been curtailed because the filter plant capacity is limited by a rated capacity of 288,000 gallons in 24 hours. Where the rated capacity has been exceeded on occasion by drawing down the stored reserve, this endangers pressure and reserve in event of fire.

The Citizens' Committee of the McKownville Improvement Association which laid the groundwork for the establishment of the McKownville Water District had recommended in 1947 that the Town Board consider four possible sources of supply:

1. Purchase of water from the Lathams Water District.
2. Purchase of water from the City of Albany.
3. A water supply from drilled wells.
4. Acquisition of the then privately-owned reservoir and construction of a filter plant.

The Citizens' Committee was advised by the Supervisor of the Town of Colonie that the Latham Water District "under present conditions" was not in a position to supply water to the McKownville Water District.

Inquiry disclosed that the City of Albany did not wish to sell water to McKownville.

Turning to the third and less costly alternative, the Town Board let contracts for the drilling of test wells. Two such wells were drilled at a cost of \$3,195.25 with unsatisfactory results.

The first of these was drilled west of Fuller Road about 250 feet north of Western Avenue. After the contractor (Torlish and Weaver of Altamont) had reached a depth of 145 feet, drilling was halted. The engineers (Benjamin L. Smith & Associates) reported January 23, 1948: "At no time did the test well indicate a sufficient supply of water for more than a small number of dwellings. At 68 feet, the yield was about 10 gallons per minute, at 91 feet the yield was only 100 gallons per day and at 145 feet, two separate tests indicated a yield of approximately 2 gallons per minute. The sand stratum being 81 feet and 82 feet where water could be expected, did not yield a measurable amount."

The same report indicated drilling had begun on the alternate site on the Hoag, Parsons property.

A subsequent report from the engineers (February 16, 1948) stated that drilling had been suspended at a depth of 155 feet. The only water mentioned in this report as having been found was a depth of between 33 and 50 feet in a formation of "fluid blue clay". The report continued: "This formation yielded a moderate amount of water (about 10 gallons per minute), but of poor quality, holding in suspension fine particles of blue clay and having an oily appearance."

The February 16, 1948 engineers' report concluded:

"There is only one other area within the District which has not been explored or tested, that being along Schoolhouse Road east of the occupied dwellings. We do not believe conditions there are sufficiently favorable to warrant further expenditure on a test well or wells and, it is our opinion and judgment, that the plan for a drilled well supply should be rejected and the alternate plan adopted."

There is no evidence that the drilling of shallow wells around the present reservoir was considered at that time.

In view of the elimination of three of the four proposed alternatives, the Town Board acquired the Witbeck and Farley water systems, installed a considerable number of new mains, built an elevated storage tank and a filter plant.

For more than two years after the present system was put into operation, the water produced was of satisfactory quality and quantity.

The two successive acts by the Thruway contractor caused such serious conditions that the water could not be used for domestic purposes for a period of several days. The first of these incidents was the allowing of a quantity of oil to escape into the water and the second the release into the reservoir of water from a stagnant pool in a nearby swamp.

Damage of a more permanent nature was caused by the erosion of silt from the scene of Thruway construction into the reservoir. This at various times of rapid runoff caused a high degree of turbidity and eventually resulted in the accumulation in the reservoir of a large quantity of silt thereby reducing its storage capacity.

Origin of This Committee

The continued muddy condition of the water early in 1955 brought numerous and vigorous complaints from users and led the Town Board to look for a permanent solution.

Two alternative solutions were advanced for consideration at a well-attended public hearing March 28, 1955.

Briefly these alternative proposals were for rehabilitation of the present filter plant and for development of a shallow well supply.

This Committee was formed to examine these alternative proposals and to make recommendations to the Town Board. It has had the advice and assistance of Mr. J. K. Fraser of the Albany Engineering firm of Barker & Wheeler and has studied proposals made by Hall and Company, Inc., of Delmar.

The cost of the first alternative - "Improvements to the present plant" - has been estimated by Barker & Wheeler at \$25,000. These improvements included construction of a new intake, a new low-lift pumping station (1) and pumping equipment, improvements to the mixing basin, construction of baffles in the sedimentation basin (2), changes in control equipment, provisions for pre and post-chlorination and other miscellaneous work.

(1) Engineers are of the opinion that, in any event, the present low-lift pumps may soon have to be replaced.

(2) Sedimentation basin baffles were installed as an immediate improvement in 1955.

These changes would produce no increase in the 288,000 gallons-per-day capacity of the plant although it could produce up to the rate of 350,000 gallons per day for short intervals.

To increase capacity beyond this would require "additional filtering capacity, and possibly increasing the mixing, sedimentation and pumping facilities" as well as an addition to the filter building. "Such increased capacity by rough estimate only, might cost approximately \$27,000," Barker & Wheeler report.

The estimated cost of a shallow well supply to produce 288,000 gallons per day including engineering, legal fees, sale of bonds and miscellaneous costs is \$35,000 while such a supply to produce 350,000 gallons per day is estimated to cost \$40,000.

In short, while the improvement of present plant for present capacity would cost \$25,000 compared to \$35,000 for shallow wells, plant improvement, with increase in capacity would cost \$52,000 compared with \$40,000 for shallow wells producing 350,000 gallons per day.

The following is a comparison by Barker & Wheeler of annual operating costs plus debt service (principal and interest) costs for the two proposals:

Operation	Present Plant		Well Supply	
	As Operated in Past	Rehabilitated Plant	288,000 gpd	350,000 gpd
Salaries	\$2,500	\$4,000	\$1,000	\$1,000
Chemicals	700	2,500	50	75
Maintenance & Repairs	500	500	100	100
Consulting Chemist	—	1,500	—	—
Total (1)	\$3,700	\$8,500	\$1,150	\$1,175
<u>Added Debt Service</u>				
Amount Borrowed	—	\$25,000	\$35,000	\$40,000
Average Bond Retirement	—	833	1,167	1,333
Average Interest	—	375	525	600
Total (2)		\$1,208	\$1,692	\$1,933
Total (1) & (2) . .	\$3,700	\$9,708	\$2,842	\$3,108

- (1) Does not include operating costs common to both projects.
 (2) Based on average costs for 30-year bond period - interest rate of 3% (First Year costs would be higher).

From the foregoing it appears, assuming that exploratory tests showed such a shallow well would be satisfactory in quantity and quality, the District could get an increased supply (from the present rated capacity of 288,000 gallons per day to 350,000 gallons per day) for a total additional annual expenditure of \$3,108 compared with \$9,708 for a "rehabilitated plant" of present capacity. Whether a shallow well supply would require chemical treatment cannot be determined at this time. On this subject the Barker & Wheeler report notes:

"It is not believed that chemical treatment would be necessary. However, preliminary tests to determine feasibility of the well project should be made, which tests would determine (A) quantity of water available and (B) quality of water. These preliminary tests would enable both the Contractor and Engineer to make more intelligent estimates of cost of project."

Hall and Company also recommends exploratory work to determine both the quantity and quality of water from a shallow well supply:

"Our suggestion is that the District appropriate an amount not to exceed \$5,000.00 for a thoro job of exploratory work to be done by us at the site of proposed well system, under the direction of and in cooperation with your Engineers, Barker & Wheeler.

"This work to be done so that if successful, it can be incorporated into the final construction of the total plant. We did this same kind of preliminary work for the Village of Guilderland before the construction of the present plant.

"This exploration work would cover the necessary area in which the wells would be installed. It would determine the character of the permeable water bearing deposits, the maximum depth permissible for well construction, the length and size of well screens, the amount of water available from each well, distance they must be spaced to avoid excessive interference with each other, length and size of header system, grades to maintain, samples of water for analysis, together with extended pumping to establish permanent constant yield of water from the aquifer, and stabilization of water chemistry."

The Committee has explored the prospects of hiring a qualified and experienced filter plant operator, or sharing such an operator with another district in this area. The demand for such operators exceeds the supply. There is no prospect for hiring one for \$4,000 per year or even substantially more. Supervision of operation of the pumping system would not require a person with the technical skill and judgment of a filter plant operator. Supervision of the well system would require mainly mechanical skill. This job could be combined with that of supervision of other water districts and of the McKownville Sewer District and the salary apportioned.

Even though the estimate of cost of operation of the well system should prove to have been somewhat optimistic, there would still be considerable leeway for saving.

A well supply should be less subject to pollution than the present surface supply. Pollution dangers are likely to increase with further development of the area around the reservoir.

A well supply, if one of satisfactory quantity and quality can be developed, also would eliminate silt conditions such as those which occurred during and after the Thruway construction.

The well supply could be augmented according to information supplied by Mr. Hall to produce up to 700,000 gallons a day from wells in the Town of Guilderland within a feasible pumping distance.

It is true that a well supply was proposed by the original committee and its failed to produce promising results. However, the test wells drilled in 1947 and 1948 were deep wells. At that time, there was little experience in this area with the type of shallow well supply contemplated in the Hall proposal. The Hall proposal is for shallow wells -- ten to thirty-five feet -- in the sand around the present reservoir and possibly in other promising locations.

Recommendations:

Because the shallow well proposal holds promise of a better and greater water supply at a lower annual cost, your committee recommends that:

1. The Town Board institute proceedings for the exploration of a shallow well supply at a cost of approximately \$5,000.
2. If this exploration proves satisfactory in quantity and quality, that a supply of 350,000 gallons per day be developed.
3. Additional land be acquired to protect the wells from possible pollution and for future expansion of the well supply to provide for a future supply of 700,000 gallons per day.
4. Any settlement from the New York State Thruway Authority be applied to the cost of exploratory drilling and development of shallow wells rather than to the dredging of the large accumulation of silt.
5. As a matter of record the question of availability of water from the City of Albany and the terms and conditions again be explored by the Town Board while the shallow well supply is being tested and before full development of a shallow well system is undertaken.
6. In the event that testing for shallow wells proves such wells are not feasible, immediate steps be taken to rehabilitate the present plant to put it in condition to be used for the many months it would take to explore other alternative methods of supplying water to this community.
7. The Town Board establish an advisory committee to consider the long-range water needs of the entire town and the desirability of supplying these needs by establishing a town water supply and distribution district.

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May 3, 1956