

The Mount Kemble Lake Board of Directors established the Water Subcommittee in the fall of 2012 to examine private utility company bids to purchase our Water System. This report presents their process, findings and recommendations.

## **Water Subcommittee Report to the MKL Board**

April 2013

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## ***INTRODUCTION & SUMMARY***

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This report has been precipitated by an opportunity, not by a problem. Our water system is in good shape and all quality metrics meet or exceed NJ State mandates. However, we have been presented with the opportunity to sell the MKL water system to a public Water Utility. The Association Board chartered a Water Committee to study the opportunity, to evaluate a proposal from Aqua New Jersey to buy the system, and to make a sell/hold recommendation to the board. The committee has performed due diligence; has informed, solicited feedback and addressed further questions from residents. It is the recommendation of a majority of the committee members that the Board should proceed with a recommendation to the community to vote authorization to sell the system. Furthermore, the committee recommends that the net sale proceeds be used by the Lakeshore Company to help in the payment of its debt, passing the benefit through to residents in the form of lower Association dues.

The rationale for the Committee's Sale Recommendation can be summarized as follows:

1. **Sale will reduce MKLA's expenses and investment requirements. \$573 per-year, per member will be freed up** and can to be returned to members in the form of a dues reduction<sup>1</sup> without any change to our projected bank balances, cash flow, planned projects or ability to cope with unplanned projects in other community assets. Residents will receive a monthly bill from Aqua NJ, but they will gain control of water usage driven costs. Having meters (either in the basement or underground) means that some residents will pay less than \$573 annually and some may pay more.
2. **Sale will provide the community with a water system run by a professional water company.** By professional we mean a company that makes its living by constructing, and operating water systems, uses documented Standard Operating Procedures, and is staffed with trained engineers who have extensive experience in running, repairing and improving water systems. In contrast, MKL's water company has been run by

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<sup>1</sup> The Committee recognizes that the board and community might wish to use some of the amount of \$573 made available to fund other capital expenditures or to preclude the need for future dues increases caused by inflation in other operating expenses. That decision is of course up to the Board and Community, but it does not impact this analysis. It just represents an alternative use of the funds made available by a sale of the water system.

- volunteers. For decades, a series of extraordinarily dedicated and hardworking volunteer Vice Presidents/Water System Managers with varying degrees of technical knowledge have taught themselves the ins and outs of our system. Additionally, the Association hires Agra Environmental to test our water and to provide technical advice. We noted, however, that at MKL all decisions about the system are in the hands of the volunteer Water System Managers, we do not have formal training courses and we do not have documented Standard Operating Procedures. In short, current operations are not conducted with the same rigor seen in a public, for profit Water Company. While the committee was very impressed with the amount of time our volunteer Water System Managers have invested in gaining a unique expertise about our system, it questioned whether in the future we would be able to consistently find volunteers with the time and commitment to gain such in-depth knowledge.
3. The water system is approximately 85 years old. It will continue to take substantial investment to keep it operating and we have been surprised by costly repairs in the past. Reserves are established for future maintenance, but not to replace the main pipes, the tanks, or for expenditures required by future regulatory requirements. The main pipes (90% of the system) do appear to be in good shape (we inspect them whenever we have to repair minor leaks). **Sale removes the need for all water system reserves and the risk that we may under reserve.**
  4. **There are potential liabilities associated with providing water.** Due diligence has convinced us that there is no material risk of chemical pollution of our aquifer<sup>2</sup> and we believe the chances of someone seeking damages from the community for any reason are very small. However, we do not carry liability insurance for illnesses caused by our water and it would be costly to defend any lawsuit for the community and volunteers.
  5. Commercial water companies earn their profits through investment in infrastructure spread across their entire NJ rate base. Aqua NJ's rate base includes 56,000 households. Selling the system is comparable to placing our water system in a large insurance pool rather than being self-insured. Because it receives a statutory return on any new capital investment that is deemed reasonable by the State, **Aqua NJ is incented to maintain and improve our system.**
  6. **Outages such as have occurred with JCP&L are not relevant to our water system** because our pipes are underground and, like our PSE&G gas lines,

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<sup>2</sup> See Appendix I

are not vulnerable to surface storms. Aqua NJ had no adverse service impact during Hurricane Sandy, gave good service to its customers, and is committed to installing a generator to maintain power to the pumps (either one of which can run the system) through future storms. .

This report opens with a more detailed discussion of the committee's recommendations and the rationale for the positions taken, both on sale and on use of sale proceeds. The balance of the report captures the salient background, issues, and findings of the committee.

## ***RECOMMENDATION FOR SALE***

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The Water Committee (WC) recommends that we accept Aqua NJ's offer to purchase our Water System, pending negotiation of an acceptable contract and, of course, subject to approval of the Shareholders.

In developing this recommendation, the Water Committee finds that the decision to sell or hold hinges not on knowable facts, but rather on a) judgment regarding largely unknowable future developments, b) one's attitude about risk and c) one's point of view regarding the relative value or cost of some practices. We find that the key issues where judgment pertains, and thus the key issues driving our recommendation, are: A Professional Water Company running the MKL water system, Monthly Cost of Water Service, Long Term Costs & Financial Risks, and Community Control and Disruption. A brief comparison of point of view on each of these issues follows. More extensive data can be found in the Appendices.

### ***Professional System Management***

Our water system has run well for over 85 years. A volunteer Water System Vice President is responsible for making decisions regarding maintenance and improvement. In recent years, we have retained a professional Licensed Operator (Agra Environmental) that tests our water frequently and provides us with advice about system maintenance whenever we ask for it. A group of community volunteers (VSAs) is responsible for daily monitoring. Test results uniformly indicate excellence in all relevant quality metrics. (It is certainly true that this is a higher level of attention than most Harding residents, 90% of whom are on well water where the water is pumped directly into their houses, apply to their individual wells.) This track record and the community spirit displayed in this volunteerism are commendable and weigh in favor of retaining ownership.

Our ability to run the water system in a high quality manner has been dependent on individuals, such as Bob Edgar, Jim Irving, Bill Manser, Dave Molendyke and Newton White, all of whom developed a high level of expertise in the system. The Committee is concerned that in the future managerial volunteers may not consistently have the time or inclination to nurture the same level of knowledge as in the past. Indeed, the history of the lake has been to outsource functions that used to be performed by volunteers.

The Water Committee is also concerned that a large failure or major replacement project would tax our local expertise. Additionally we have found more than a few examples of where our volunteers have made decisions or taken actions that a professional Water Utility would not do. There are repeated incidences of lapses in VSA monitoring (more than 15 days in 2012 when the chlorine was not monitored). We are repeatedly surprised to find additional NJ State requirements and industry standards that we had no knowledge of and thus had not implemented (e.g. annual exercise of valves and hydrants, regular draining and disinfection of tanks). We fix anything we find broken and occasionally “walk” the system with Agra Environmental to see if any additional maintenance issues present themselves, but we do not have a routine maintenance ritual and do get surprised by component failures that disrupt service (e.g. the pipe leak that caused the Christmas 2012 Boil Water Notice, which Notice could have been prevented). We are creative in minimizing our repair costs where we can versus being attentive to industry standards. This somewhat informal and creative approach is a natural outgrowth of volunteerism and works well in much of our governance here at the Lake. But the Water Committee is concerned that this informality extended to management of our drinking water supply is ill advised. With increasing regulation, creative solutions may be unavailable and the committee is also concerned that the personal risks to the Board, Water Company Managers and individual VSAs operating with such informal practices is not fully recognized by the volunteers nor by the community at large.

### ***Monthly Cost of Water Service***

The average monthly/recurring cost of providing water service here at the Lake will never be lower than it is now. There are no changes that are permitted by law that will reduce what it costs us to provide the current volume of water to the community. Any changes we make to ownership, quality, professional operation or risk management may only increase the average monthly cost. Usage monitoring can however change how costs are borne. If we measured usage at each household

and charged accordingly (as Aqua NJ would), low usage households would see a cost reduction and high usage households would see an increase. Moreover, residents would have clear feedback on how much water they are using, which might incent more moderate usage and thus lower costs.

Aqua NJ has a stated corporate strategy of growth through acquisition. There is some concern that strategy leads them to acquire older or neglected systems that need more repair and replacement than average. That would drive up their rate base and in turn drive up our prices. Historically, Aqua NJ's rates have increased at about 5% a year (combining operational and capital costs) compared to MKL's 4.6% increase per year in underlying operational rates (electricity + Agra Environmental). MKL has a “spikey” capital expense history (see Appendix A) and has recently instituted a multi-year planning and reserving approach to prepare for and fund those investments we can anticipate

Cost comparisons are difficult to make. Aqua NJ's costs to residents vary considerably based on usage volumes and MKL's costs to residents vary considerably based on the level of investment/repairs. To understand this more fully and/or to see what it could mean to you personally, we encourage you to read Appendix D. But the Water Committee finds that in the event of sale \$573<sup>3</sup> per year per member will be freed up and can be returned to members in a dues reduction without any change to our projected bank balances, cash flow, planned projects or ability to cope with unplanned projects in other community assets. And looking broadly at the possible ranges the yearly price for the “average” user (250 gals/residence/day) will be about \$605<sup>4</sup> with sale to Aqua NJ and has a risk of growing somewhat faster than if we hold the system. In the opinion of the majority of the Committee, that average cost premium – which amounts to \$32 per year per average household – is minimal (and within the margin of error of this report) and the decision on the sale of the water system should be based on the other factors which are discussed in this report.

This \$32 in added average cost assumes that proceeds from sale are used for 14 years to pay Lakeshore's NJDEP loan payments, reducing MKLA's rental payments to Lakeshore and thus MKLA dues. Alternatively, if the purchase price were put in a

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<sup>3</sup> Assumes proceeds from sale are used for Lakeshore's NJDEP loan payments, reducing MKLA's rental payments to Lakeshore and thus MKLA dues. . Using this approach, in 2028 the \$87,000 will be completely used up, but the cost it was being used to subsidize – the dam loan payments – will also be finished, so there will be no reason to increase dues back up. See Appendix D

<sup>4</sup> See Appendix D for full analysis



bank account and the earned income was used only to offset dues (and the principal was never touched), the additional average cost per household would be \$50 – 63 (depending on what one assumes about use of funds from refund for generator<sup>5</sup>). However, the Committee recommends spreading the purchase price over the remaining life of the dam loan. (The Committee recognizes that the board and community might wish to use some of the amount of \$573 made available to fund other capital expenditures or to preclude the need for future dues increases caused by inflation in other operating expenses. That decision is of course up to the Board and Community, but it does not impact the forgoing analysis. It would just represent an alternative use of the funds made available by a sale of the water system.)

It should be noted that other factors, such as individuals changing usage habits once they are charged on a volume basis, could reduce this differential. In addition, if the leakage in our system is greater than estimated because of the steel pipes, which comprise about 10% of the mains in our system and are extensively perforated (based on the experience on Primrose Hill), or capital expenses are higher than anticipated, this could further reduce or even eliminate the differential. These factors exemplify how difficult it is to compare costs. However we acknowledge that placing a priority on keeping average monthly costs low weighs in favor of retaining ownership of the system. We also believe that these cost differentials are within the margin of error of this report and should not be the key factor in a decision on selling the water system, since the amounts being discussed are not large.

### ***Long Term Costs & Financial Risks***

The Board has a 10 year plan for future investments that covers most likely failures and repairs. We also carry insurance that should cover us against all the likeliest accidents, and have reviewed and assured ourselves with regard to the protections on our aquifer. [Questions raised at the November 2012 inform session implying vulnerability of our aquifer have been eliminated by additional due diligence completed<sup>6</sup>. Large dollar amounts of additional insurance, based on old insurance quotes, discussed at that same venue will not be required.] But we don't know what we don't know. We have a history of being surprised by unforeseen failures and of underestimating the full costs of engineering and implementing repairs and improvements. Our 10 year plan does not anticipate any need to replace or repair

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<sup>5</sup> See Appendix D for full details

<sup>6</sup> See Appendix I

any of our aging tanks, to upgrade any of our cast iron pipes, nor any expenditures required by new regulations or requirements being introduced.

With regard to the cast iron main pipes: we have inspected them any time repairs have exposed a length and they appear to be in very good shape. They are all 4" in diameter, whereas NJ State standard is 6", but we do not currently anticipate any requirement to upgrade.

With regard to the tanks: the two vertical tanks appear to be in good shape. The horizontal tank has small leaks and may need material remediation within the next 10 years.

With regard to liability: we believe we are adequately insured for most risks, indeed we have recently increased the coverage for accidental damage to our tanks and other plant. Based on due diligence completed, we do not see a material risk of chemical pollution of the aquifer. However, we are not presently insured for claims of ill health arising from natural causes (e.g. bacteria or fungi in pipes or tanks). Residents of Harding with wells also do not carry this insurance but their water is piped directly into their houses. Public water companies do carry insurance for health problems, but such companies admittedly have more risks of litigation and can get much more attractive insurance premiums. We've never experienced a Water System related lawsuit and while the cost and disruption of mounting a defense would certainly be large, we acknowledge that the possibility of such a suit is small.

How one nets out all these unknowns is very much related to one's point of view regarding risk. If you believe that the best way to handle risk is to off-load it, you favor sale. If you believe that whatever the uncertainties, the Community will do a better job of finding and implementing solutions that are in its own best interests vs. the choices made by a public utility, you favor holding.

The Water Committee recognizes that identified future investments are manageable and that the cost of off-loading the unforeseen ones may be borne in somewhat higher average monthly rates. Still it is the opinion of the majority that since water service is so incredibly important to quality of life and since surprises with regard to water systems can be very large from a cost, timing and disruption perspective, the community will be best served by placing the responsibility for the system in the hands of a Professional Water Company with the resources and State mandated responsibility for timely response.

## *Control*

So long as we own our water system, we have significant control over most decisions (although we are bound by the same State regulations as any other provider). We have in the past shown considerable creativity and frugality with regard to how we maintain the system. If we sell the system, we will have no control over the particulars or the timing of any such decisions. The provider will be guided by State regulation, industry standard practices, principles of good business and the drive to increase return for their investors.

Our members have always had control over their individual household usage, but that has never translated into any savings/costs to the member. In the event of sale, members will benefit from any effort to reduce their usage, and conversely, high volume users will “carry their own weight” financially.

There are residents who have great faith in our members’ ability and willingness to rise to whatever the occasion demands and their ability to seek out and implement in a timely fashion the solutions that protect the community’s best interests. The Water Committee recognizes the legitimacy of that point of view and understands that it would drive in favor of retaining ownership. But we also recognize that over the decades, the community has increasingly opted to pay to have services provided that once were handled by volunteers (e.g. tennis court surfacing, leaf & debris removal, water-system licensed operator, and club house cleaning for large parties). Additionally, we know that large unforeseen failures necessitate timely response and believe that the community will be best served by having all decisions in the hands of a company that is familiar with best industry practices, has the resources to address problems promptly and is accountable to State regulators.

## *Disruption*

In the event of sale, Aqua NJ will be making several changes to our system, all at their expense. Meters will be installed in the home or underground in every household and other service point (Clubhouse, garden, etc.). Any household that does not currently have a curb stop valve will be outfitted with one at no cost to the homeowner. Automatic chlorine monitoring equipment will be installed at the pump houses. That work will create disruption for some weeks. Some households will be more significantly affected than others. The Water Committee acknowledges that disruption is never pleasant, but finds that this modest degree of change after a sale will be offset by the other factors discussed in this report.

It should be noted that some residents are concerned with selling the water system due to the recent experience with JCPL. However, the committee believes that this analogy is flawed. The electrical grid is an inter-related above ground system where failures can impact great areas. Our water system is a totally isolated system, the pipes are buried, like our gas lines and unlike our electrical wires. Only two factors, other than some cataclysmic event, which would affect us even if we retained ownership, can cause a loss of water. The first is an electrical outage that will be avoided by the installation of an automatic, natural gas generator, whether we sell or do not sell. The second is a simultaneous failure of both pumps, that is extremely unlikely. Moreover, a large company could address multiple pump failures more quickly than we could due to internal staff and relationships with many contractors.

In addition, since they get a statutory rate of return on their incremental capital expenditures, public utilities are incented to make reasonable capital expenditures to maintain their systems. NJ has been good about allowing such a return on reasonable and necessary investments by water utilities as approved by the BPU.

### **Conclusions**

The Water Committee believes that a possibly larger average monthly cost is worth the advantages reaped in return: a system operated by a Professional Water Company at industry standard practices and not dependent on future expert volunteers, relief from any long term financial uncertainty and the burden of quickly responding to any unforeseen failure, and the ability of individual members to manage their own household costs through moderation of usage. We recognize that parties who have faith in their neighbor's ability and willingness to rise to any unforeseen occasion and manage it creatively and frugally now and well into the future may be skeptical about a professional utility with profit motivation. Still, the Water Committee believes that were we to be building this community anew, no one would choose to build and take on the responsibilities of water service.

The Water Committee recommends that it is in the best interest of the community to accept the offer from Aqua NJ. The Committee further recommends that the expense savings from such a sale be rebated to MKL residents in the form of a dues reduction, as discussed in the next section.

## ***RECOMMENDATION FOR USE OF SALE PROCEEDS***

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Point 3 of the committee's charter is to "make recommendations for the use of sale proceeds." The offered purchase price is \$97,000. Because of offsetting operating losses, Lakeshore's taxes on the proceeds will be zero. Legal fees for the transaction are estimated at \$10,000, leaving net proceeds to Lakeshore of about \$87,000.

To fulfill Point 3 of its charter, the committee considered a number of alternatives, for using the \$87,000. These alternatives included:

1. Use the sale proceeds to benefit the community by using them for other capital projects or to avoid some future dues increases due to inflation in other operating costs. The Committee recognizes the attraction of this option, but considers it an entirely separate matter, i.e. any new capital projects or dues increases should be weighed on their own with appropriate input from the Board and Community, not tied into or confused with the decision regarding Aqua NJ's bid.
2. Distributing the \$87,000 in the form of a one-time dividend to Lakeshore's shareholders. This would amount to about \$915 per shareholder.
3. Investing the \$87,000 and forever using the investment's returns to pay expenses and pass the reduction in expenses on to residents in the form of reduced Association dues. (Note that dues are no longer paid to Lakeshore, but Lakeshore's reduced expenses can be passed on to Association members in the form of decreased rents that the Association pays to Lakeshore. The Association in turn can lower its dues). Assuming an investment return of 5%/yr this would amount to \$4350/yr or about \$45/yr in reduced dues per shareholder.
4. Investing the \$87,000 and use it over a specific period of time to reduce Lakeshore expenses. Our recommendation, explained in more detail below, is to use the \$87,000 over 14 years to pay Lakeshore debt expenses, resulting in a dues reduction of \$63/yr per shareholder.

Distributing the proceeds as dividends has the attraction of immediately benefitting shareholders. However, it is tax inefficient, in that federal and state taxes would be due on them. Estimating a combined state and federal rate of 33%, taxes of \$305 would be due on the \$915, resulting in a net benefit of \$610 to each shareholder.

Points 2 and 3 are really the same basic idea. They are tax efficient in that the \$87,000 benefits the shareholders without creating income, and thus a new tax liability. They merely vary with regard to the term over which the benefit is paid, perpetuity or through 2028. Note that the longer the benefit is drawn out the less its annual value to the shareholder in earlier years. The Committee is also concerned that without a specific plan for the \$87,000, it will be consumed well before 2028.

Trying to maximize the benefit to the shareholders, make it tax efficient, having a specific plan and avoiding any dues “yo-yo” effect (dues reduced temporarily and then increased when the benefit expires), the Water Committee recommends that the proceeds of the sale be used to contribute to the payments of Lakeshore’s dam/dredge obligations uniformly over each of the semi-annual payments from 2014 through 2028. Using this approach, in 2028 the \$87,000 will be completely used up, but the cost it was being used to subsidize – the dam loan payments – will also be finished, so there will be no reason to increase dues back up.

## ***THE WATER SYSTEM: DESCRIPTION AND OPERATION***

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The water system was established at the time the lake community was developed in the late 1920’s. The system consists of four major components:

- Two wells that tap into the aquifer at a depth of 220 feet (pump house 2) and 150 feet (pump house 1). A third well was drilled but is not presently needed or in use.
- Two pump houses that contain pumps, well controls, chlorine injection equipment, and monitoring equipment.
- Three storage tanks that provide gravity feed to deliver water to residents. One is a horizontal tank that holds 22,000 gallons that was installed in 1975. It was previously used in a brewery. The other two are vertical tanks that each holds 10,000 gallons. These were installed nearer to when the system was started.
- Distribution system, comprising pipes under community roads and smaller gauge pipes that carry water to individual residences and community facilities. The distribution pipes are mainly 4 inch cast iron that is in very good condition. The balance is steel, which will have to be replaced in the near future.

The water system is approximately eighty-five years old. As needed, sections of the distribution system have been replaced when leaks have been found. Most but not all buildings in the community have curb stops. During power outages residents are asked to conserve water, and, as necessary, a generator is leased to power the system. A history of annual expenditures to provide water is shown in Appendix A.

The management of the water system is currently the responsibility of Rick Barrett, the vice president of the Association Board. Technical oversight of the system and weekly water testing is performed by Agra Environmental, under contract to the Board. Residents who compose the VSA perform daily monitoring and data collection. There is no mechanized or computerized monitoring or data collection, but such system could be added (current best estimated cost is \$20,000)

The cost of water is recovered from residents as part of Association fees. There are no individual meters. All residents are charged the same amount regardless of usage. On average, water costs each household approximately \$497<sup>7</sup> annually.

Water quality standards are set by the New Jersey Department of Environmental Protection (NJDEP) and are monitored by Agra Environmental. There is no direct involvement with the New Jersey Board of Public Utilities (NJBP) because water is not sold outside the lake community and the cost is covered by dues.

## ***WATER SYSTEM BID BACKGROUND***

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Between 2009 and 2011, the Association Board chartered a Financial Committee to recommend ways in which future community financial needs could best be addressed. One of the committee's considerations was the sale of assets, including the water system. Such a sale would provide revenue and would reduce future investment needs. Several commercial water companies were contacted and some evaluated the system but declined to bid. Aqua NJ New Jersey ("Aqua NJ") indicated a possible future interest. With no serious interest, the Financial Committee dropped the idea of a sale.

In 2012, Aqua NJ expressed interest and the Lakeshore Company pursued discussions with Aqua NJ and contacted six additional commercial water companies to determine their possible interest. As a result of this, two companies evaluated the

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<sup>7</sup> See Appendix D for details of calculation

water system and tendered bids. One was from Aqua NJ and the other was from the Middlesex Water Company. In January 2013, Middlesex withdrew its bid citing a shift in business strategy.

## ***ESTABLISHMENT OF WATER COMMITTEE***

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In November 2012, the Association Board chartered a Water Committee, defining the following responsibilities:

1. Evaluate the proposals and recommend one to the Board for consideration
2. Provide pros and cons of a sale and the impact on members
3. Make recommendations for use of sale proceeds
4. Provide the Board with materials for communicating to the members by inform meetings and other media, as needed
5. Solicit input from the community
6. Assist the Board in conducting a special meeting to vote on a potential sale
7. If the community agrees to sell, negotiate terms of the sale and present the terms for Board approval

The people named to the committee were: Rick Barrett, Bobbi Coulter, Terry Dwyer, Austin Godfrey, John Krizko, and Don Kuhn.

## ***AQUA NJ AND ITS BID***

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Aqua NJ New Jersey (“Aqua NJ”) is a subsidiary of Aqua America, Incorporated, a publicly traded holding company incorporated in Pennsylvania. (The company’s financial profile is included as Appendix B.) Aqua America does business in eleven states with its largest operation in Pennsylvania. Its annual operating revenue is approximately \$700 million. Aqua NJ serves 56,000 households that form its rate base.

Aqua NJ has evaluated the water system and has made a purchase price offer of \$97,000. The company proposes to invest \$100,000 in its first year of ownership. There will be no additional charge to members or the community for these system improvements, which are as follows:

- Meter installation for all system users – this item is about \$45,000 of their investment



- Curb box installation for those buildings not so equipped
- Monitoring devices and auto dialer
- Back-up power generator – MKLA has already set aside \$35,000 for this item, will proceed with the installation in 2013 and (if sale is proceeding) will do so in concert with Aqua NJ and be reimbursed by them.
- Well improvements (as needed)
- Chlorine analyzer and chart recorder
- Main repair and replacement (as needed)
- Valve repair and replacement (as needed)

To date, there have been no contract negotiations with Aqua NJ. Such negotiations would commence once the community decides whether it wants to sell the water system.

## ***IMPLICATIONS OF A SALE OF THE WATER SYSTEM***

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If the community chooses to sell the water system to Aqua NJ, the company would own the system and be responsible for all planning, investment, and operations. The properties on which water facilities are located remain community-owned. Aqua NJ would have access to its equipment. Any repairs to piping or other facilities, whether under community roads or elsewhere on community property, will involve restoration upon completion of work.

Meters (read by radio from the street) will be installed in all households and water-using facilities. Aqua NJ will bill all users based on usage. The Association will have no involvement in customer service issues between residents and Aqua NJ. The Association will, however, work cooperatively with Aqua NJ to assure residents are notified of any work performed by Aqua NJ that may disrupt service or roads in the community. If the sale is approved, Association fees could be reduced; the Water Committee calculates that \$573<sup>8</sup> per member per year could be made available, to be returned to members in dues reduction without any change to our projected bank balances, cash flow, planned projects or ability to cope with unplanned projects in other community assets . The bills from Aqua NJ will vary based on

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<sup>8</sup> See Appendix D for details of calculation

metered usage, but it is estimated that households with average usage (250 gallons/day) will pay about \$605<sup>9</sup> annually. The effective cost differential between MKL and Aqua NJ approximately \$32 per average household per year.

Appendix C is a graph showing the history of the annual cost per household for water provided by the Association and Appendix D shows an analysis of comparative costs.

The NJBPU to whom Aqua NJ must address tariff filings governs rates charged for water to all Aqua NJ customers in New Jersey. All customers in this rate base in the State are charged the same rate. Quality standards are established and regulated by the NJDEP. Commercial water company rates are based on reasonable and necessary costs including a reasonable rate of return on capital investments and operating expenses. Companies are incented to make reasonable capital investments. Unreasonable investments are disallowed.

Capital investments made to the community's water system or to any other system owned by Aqua NJ are figured into the cost basis for tariff filings. Thus, being owned by Aqua NJ is similar to being in an insurance pool where rates are based on expenses for serving all insured.

With a sale, Association responsibilities are eliminated as follows:

- Capital projects planned in the Lakeshore Capital Reserve Fund become the responsibility of Aqua NJ, such as: near-term anticipated costs (e.g. pump replacement), eventual tank replacement, unknown repairs (e.g. pipe replacement), upgrades to the system (e.g. generator), and future regulatory mandates
- Operations move to Aqua NJ performed by the current licensed operator (Agra Environmental), operations monitoring and data collection (work currently done by VSAs), interface with the NJDEP, and coordination and payment for repairs.

Considerable time and energy was spent by both the Association Board and the Water Committee on the subject of uninsured risks in operating a water system. The Association carries property insurance for potential damage to components of the water system (along with other community property). The Association does not carry product liability insurance; that is, insuring against the potential claim that someone became ill from the water and, as a result, sues the Association. Given the

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<sup>9</sup>See Appendix D for details of calculation

nature of the water system, the depth of the aquifer, and the character of the watershed, it is extremely unlikely that such an event would occur. Commercial water companies carry such insurance and Agra Environmental, that tests the water, also carries such insurance. Nevertheless, while the chance of bacterial contamination is remote, uninsured exposure exists for the community.

## ***WATER COMMITTEE DUE DILIGENCE***

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A significant first step in the process of evaluating the offer and the broader question of whether the community should consider selling its water system was to develop a series of questions the committee believed should be answered. Answers were researched and the Q's and A's were incorporated into the presentation that the committee made in an inform meeting (described further below). That meeting also provided additional questions to be answered and comments from attendees. The committee continued to research answers and the final set of Q's and A's is incorporated into this report as Appendix E.

To learn more about Aqua NJ and the implications of a possible sale, committee members interviewed representatives of five water companies that were acquired by Aqua NJ between 2009 and 2012. In general the reasons for these companies to sell to Aqua NJ were that they were losing money and/or were faced with expensive upgrades. Neither of these applies to the community's water operation. Four of the systems were similar to ours; one was a municipal system that draws water from a reservoir. None of the systems was as old as ours. Interviewees reported that maintenance of their systems after the sale was very good or excellent and several commented that response time was very prompt. None reported any restrictions or major changes to the water supply. None was aware of any billing problems. Chlorine levels remained unchanged or were adjusted upward to meet NJDEP standards, but there were no complaints about the chlorine levels. All five said that they would make the same sale decision if faced with a choice today. In general, the transition period was six months to a year. A summary of the interviews and the notes of the five interviews are included as Appendix F.

An inquiry about Aqua NJ was addressed to the NJBPU. The Division of Water which has responsibility for tariff filings indicated that they have had no major problems with Aqua NJ. Their Division of Customer Assistance reported that the number of complaints received in 2012 was 36 on a base of 37,000 customers. For comparison they reported that New Jersey American Water Company had 611

complaints on a base of 612,000 customers, essentially the same rate. Discussion Notes of the contact with the BPU are included as Appendix G

A similar inquiry was addressed to the New Jersey Better Business Bureau which reported seven complaints between 2010 and 2012. A report of resolution of these is also included in Appendix G.

Research on the web resulted in two reports from Food and Water Watch, a consumer advocacy group based in Washington D.C. The first, from 2008, focuses on Aqua NJ and its business strategy of taking over small water systems. The second report from 2012 focus more broadly on the countrywide move from publicly owned and managed water systems to those owned and managed by private equity firms. Both reports demonstrate a bias for public ownership. They can be accessed on the web at [www.foodandwaterwatch.org](http://www.foodandwaterwatch.org).

It is estimated that if the community were to sell the water system, the transition to Aqua NJ ownership and operation will take approximately a year. If the community makes any capital improvements to the system during that period and before a contract is signed, Aqua NJ will adjust its price based on expenditures made provided they are consulted before such improvements are made.

A related issue for the community and the Board is how reserve funds currently being established to address water system needs over the next two years will be handled (assuming there is a transfer of ownership). Reserves are currently being established on the estimate that \$38,000 of improvements will be made to the system in 2013 (primarily for a stand-by generator) and \$2,000 in 2014.

## ***WATER COMMITTEE INFORM MEETING***

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A critical step in the committee's work was to conduct an inform meeting with the community to present what the committee had learned to that point and to solicit resident feedback. A notice of the meeting provided basic information and was distributed both electronically and to mailboxes in late November 2012. (A copy is available on the MKL website.)

The inform meeting was held on December 12 with approximately 50 residents in attendance. A detailed presentation was made, and questions and comments were taken. Those questions that were not included in the Q and A list incorporated into the presentation were added for further research and response.

Once those questions and comments were digested into the Q's and A's, a message was sent to all residents asking them to consult the material posted on the MKL website and to make any further comment on that material or on any other subject related to potential sale of the water system. Only three residents responded to that request. A copy of the second letter to residents distributed on January 24, 2012 is available on the MKL website.

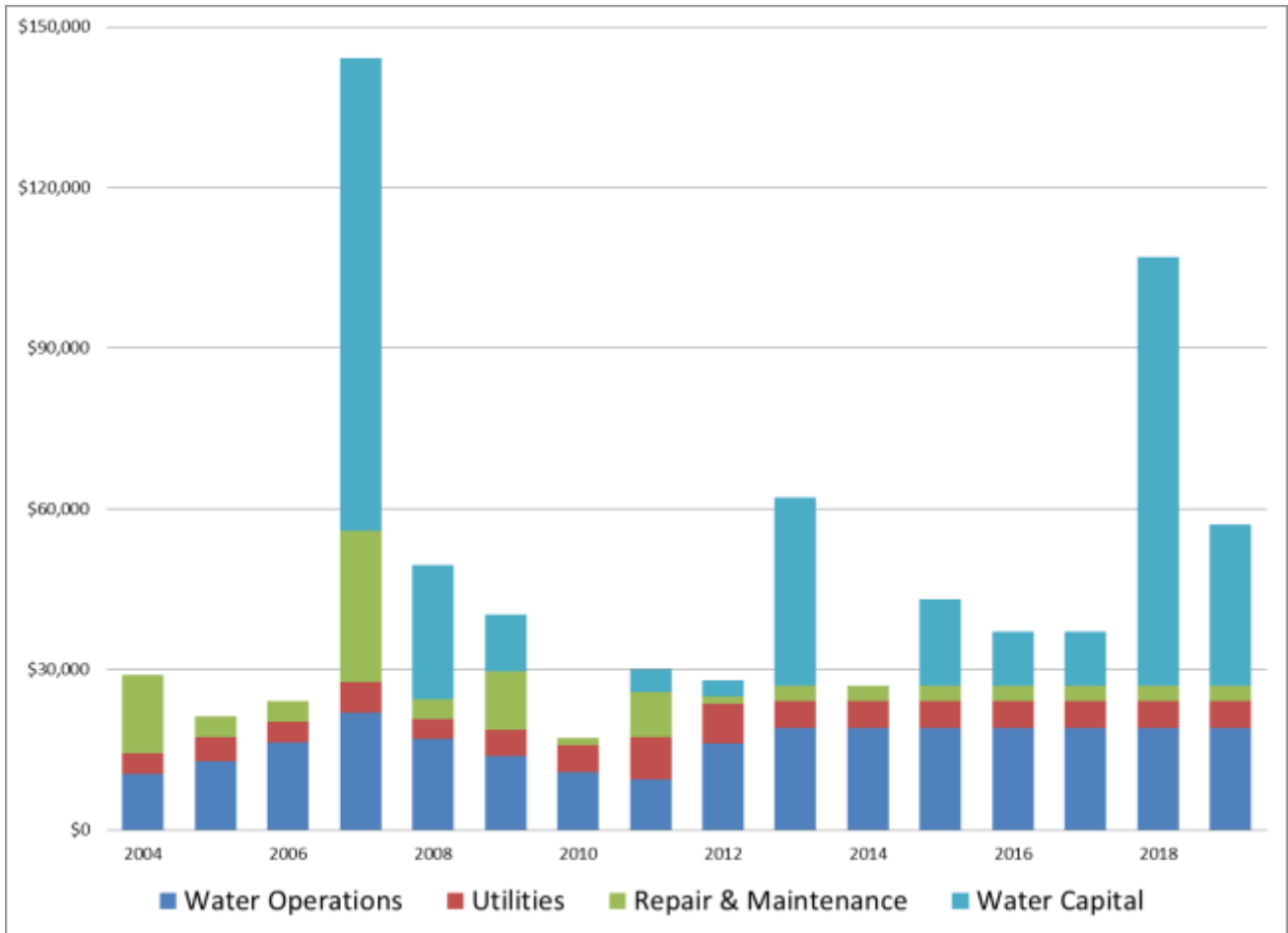
## *APPENDICES*

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# APPENDIX A – MKL WATER EXPENSES

## Actual and Estimated - 2004 – 2019

This chart shows the total Water System cash outlay for each year from 2004 through 2012, as well as projected expenses and investments in years 2013 through 2019. Note that there has been no attempt to account for



inflation, but we do know that our maintenance provider, Agra Environmental, has increased their base prices at an effective annual rate of about 5%. JCP&Ls rates have increased at about 3% annually.

## ***APPENDIX B – AQUA NJ AMERICA NEW YORK STOCK EXCHANGE PROFILE***

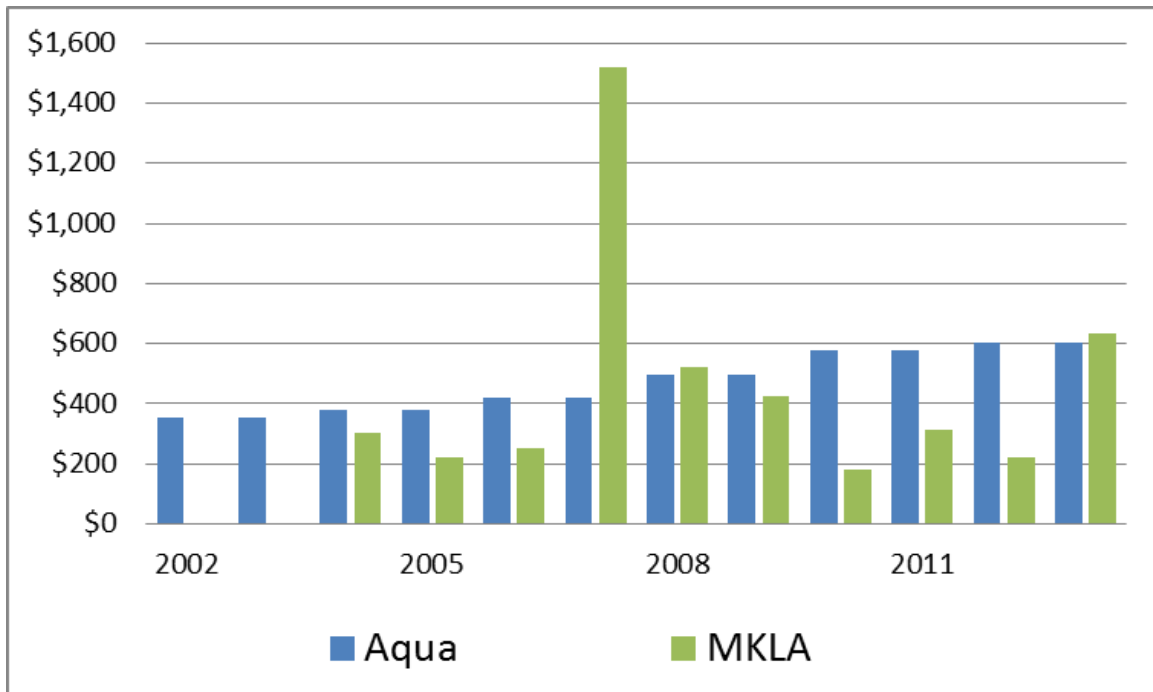
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<b>Category</b>	<b>Aqua NJ (NYSE: WTR) www.Aqua NJamerica.com</b>
Households Served	3 Million
NJ Households Served (Rate Base)	56,000
Operations In	PA, OH, NJ, NY, NC, IL, TX, FL, IN, VA, GA
Annual Operating Revenue	\$700 Million



## APPENDIX C – HISTORY OF CHANGES IN RATES/COSTS

This Chart shows in green what it has cost us each year per household to run our water system – i.e. total historical expenditures on water system divide by 95 members. It also shows in blue what an “average” household, using 250/gal/day would have paid Aqua NJ for water service, based on Aqua NJ’s historical tariffed rates. The estimate for MKLA in 2013 includes the cost of installing a generator. Unlike the large expenses in previous years shown, this item has been reserved for.



## ***APPENDIX D – COMPARISON OF COSTS, RATES AND ACHIEVABLE DUES REDUCTION***

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Comparing the historic and or projected MKL Water System monthly cost per household to the projected rate our members might see if we sell to Aqua NJ is not as simple as it may seem. The bills from Aqua NJ, like those from PSE&G, depend on usage (as read remotely each month from their meters installed at each connection point or household). This means they will vary considerably from household to household and from month to month. Our own Water System historic costs are known and we have reasonable confidence in our cost projections for the next 5 years or so. But as shown in Appendix A, our expenditures, past and future, vary considerably year by year. So the result of attempting to express them as a monthly cost per household varies considerably depending on what timeframe one looks across. In the body of this report we have netted all this complexity out into two numbers: \$573/year/household for MKL dues reduction and \$605/year/household<sup>10</sup> for Aqua NJ average cost. Here we show the broader range of that complexity and the possibilities.

### ***Aqua NJ's Projected Monthly Bills***

Aqua NJ's rates include a flat monthly charge of \$12.95 (characterized as a charge for the hookup and metering) plus a charge for gallons of water used that month (currently \$4.93/1000 gal). To get a good estimate of what our members may see as a monthly bill, we had to project what the monthly usage per household might be. We searched through multiple sources to get a grip on that projection:

Searching through online resources made available by NJDEP, NYDEP and Federal EPA yields a range of numbers, calculated and expressed a variety of different ways. Note that some of the numbers below are per person and some are per household. There are efficiencies when several people share resources in a single household and most people do not spend a full day at home. Still here is a list of typical data from such sites:

- 60 - 100 gals/person/day
- 300 - 400 gals/4 person household/day
- National Average: 240 – 280 gals/household/day

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<sup>10</sup> Includes a calculation to account for one-time payment of \$97,000

Asking both of the utilities that tendered bids for our system yielded:

- 180 gal/household/day – on average for all Aqua NJ New Jersey
- 114 gal/household/day – for lowest in Aqua NJ New Jersey (Warren County System)
- 290 gal/household/day – for highest in Aqua NJ New Jersey (Gloucester County System)
- 100 gal/household/day – for a low use MWC system (Pinelands NJ Water, a retirement community; homes are smaller and on small lots. Generally, the homes have 1-2 persons living in them.)
- 170 gal/household/day – for a medium use MWC system (Tidewater DE Utilities, a mixed community of houses, businesses, commercial, etc. However, a large portion of customers are in Sussex County, DE near Rehoboth Beach. Many of these homes only get weekend usage during the summer. )
- 391 gal/connection/day – statewide average for all of MWC (excluding wholesale) MWC has approximately 60,000 customers including homes, commercial and industry. Some very large industrial users skew the average water usage upward.

We know what our own system pumps in an average year. But we also know that we have some stretches of steel pipe that are in bad condition and leaking. How much water is lost to these leaks is unknown. Making a range of assumptions about that leakage yields:

- 250/gal/household/day – assuming 10% leakage and 97 hookups. **NOTE: this is the base assumption we used for the body of this report.**
- 175 gal/household/day – making more aggressive assumptions about leakage, based on readings taken during the Hurricane Sandy power outage<sup>11</sup>
- Clearly, the range of possibilities is wide. Here are two websites that you can use to estimate your household's water use:  
<http://www.swfwmd.state.fl.us/conservation/thepowerof10/>  
<http://www.csgnetwork.com/waterusagecalc.html>

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<sup>11</sup> See Appendix J

<b>Aqua NJ Billings as a Function of Usage</b>			
<b>Consumption Scenario</b>	<b>Usage<sup>12</sup></b>	<b>Annual Cost</b>	<b>Monthly Bill</b>
<b>Empty house</b>	0	\$155	\$13
<b>Single resident</b>	100	\$335	\$28
<b>Reported statewide average</b>	180	\$479	\$40
<b>Our conservative average</b>	250	<b>\$605<sup>13</sup></b>	\$50
<b>High use</b>	300	\$695	\$58
<b>Higher use</b>	400	\$875	\$73

***One-Time Payment for Purchase***

If we sell our system, Aqua NJ will make a one-time payment to the Lakeshore Company in the amount of \$97,000. The Water Committee has not examined all the possible dispositions for this cash. Still, any comparison of costs should make some effort to account for its impact. We assume there will be some legal expenses associated with negotiating and executing a contract, we've assumed about \$10,000 for these expenses and have netted them out of the \$97,000. We have also reviewed

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<sup>12</sup> Usage in gallons/household/day  
<sup>13</sup> Assumption used for body of this report

Lakeshore's tax situation and are confident, because we are carrying a Net Operating Loss of over \$100,000, that there will be no tax impact.

Here are three ways of thinking about the impact of the remainder of the \$97000:

- We invest it. \$87000 at long term average of 5% would yield \$4350 annually. We could indefinitely reduce our dues by \$45/house/year annually.
- We distribute it to our members and they use it to “subsidize” their water bills for the next 20 years. The subsidy would be about the same \$45 annually.
- Lakeshore uses it to repay our NJDEP loan (for dam reconstruction). This would reduce our revenue requirements for the duration of the loan (29 remaining payments from April 2014 through April 2028). Although the cash would be gone at the end of this cycle, so would the cost it was subsidizing, so there would be no need for any increase at that time. We could reduce our dues by \$63/member/year.

***Mount Kemble Lake’s “Monthly” Water System Cost***

Our Water System expenditures vary from year to year based on what long term investments we make and what system failures we need to repair. Looking backward across historical costs and looking forward across projected costs, we can come up with an average monthly cost per household. But those values vary dramatically based on what period of time backward or forward we choose.

However, we do know what we have planned to spend over the near future. The 2013 Operating Budget approved at our Annual Meeting (January 2013) is \$27,000, or about \$285/member/year, and the Capital Spending Plan presented the following planned project expenditures:

2013	2014	2015	2016	2017	2018	2019	2020	2021
\$35,000	\$ -	\$16,000	\$10,000	\$10,000	\$80,000	\$30,000	\$ -	\$ -

which amounts to \$181,000 or about \$212/member/year, giving us a total of \$497/member/year for our current annual cost to provide water service.

***Mount Kemble Lake’s Achievable Dues Reduction***

In the event of sale, we would eliminate our annual Operating Budget for Water System (\$27,000) and our LCRF Water System Projects in 2014 and beyond (\$181,000 less \$35,000). Additionally we would have a one-time net payment of \$87,000 and a repayment (\$35,000) for Water System generator, both of which the Committee recommends using to pay down NJDEP loan though 2028. We would then have a new expense: paying for water service at three community sites

(Clubhouse, garden and tennis courts). These should be relatively low usage sites; we've estimated usage somewhat less than a single resident house that was occupied year round.

Putting all of this together and assuming dues reduction was actualized at the beginning of 2014 calendar year yields the following:

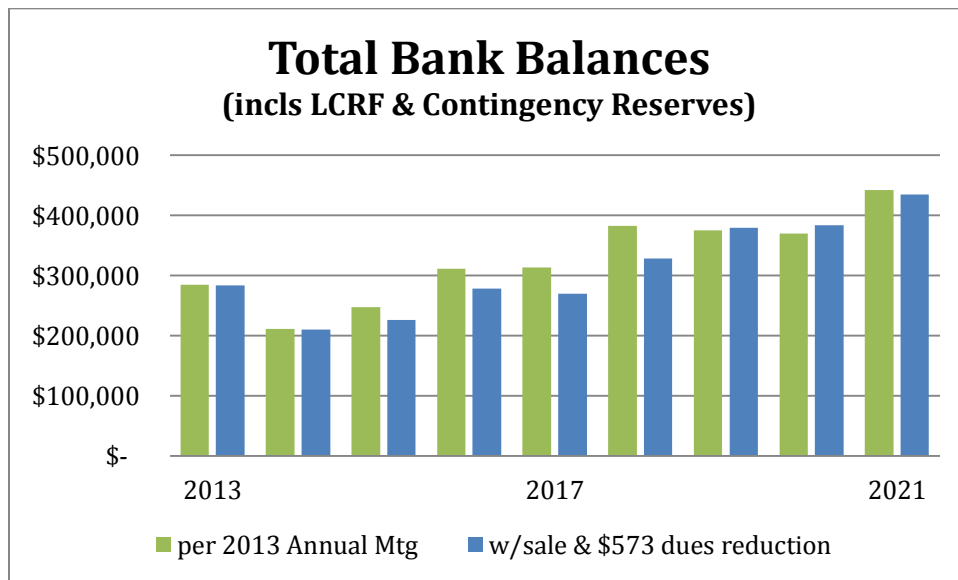
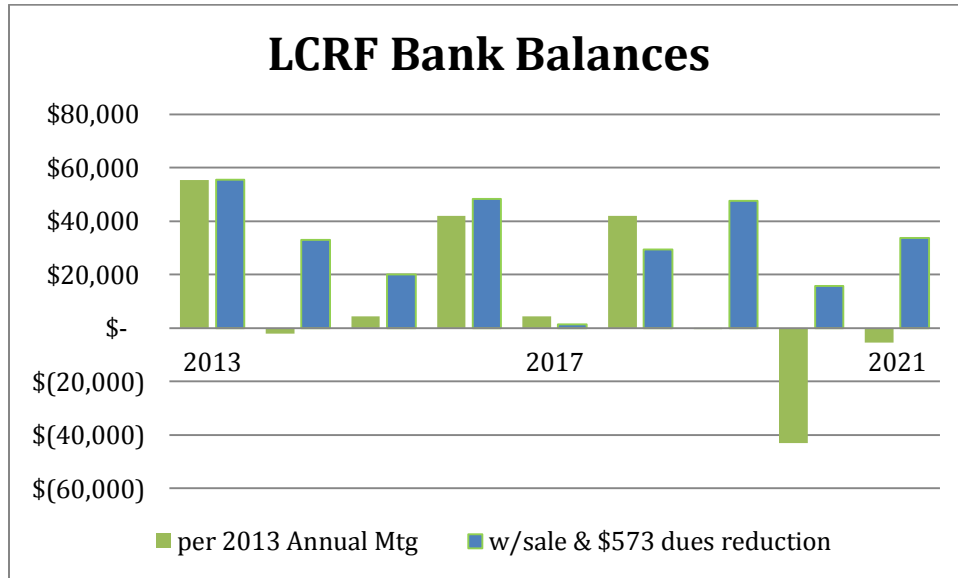
Source of savings	Amount of savings	Savings per member per year
Annual Operating Budget	\$27,000 per year	\$284
Long Term Capital Fund (LCRF) 2014 - 2021	\$146,000 over 8 years = \$18,250 <sup>14</sup> per year	\$192
Dam Loan Subsidy from one-time payment	\$97,000 less \$10,000 closing costs, over 29 semi-annual payments	\$63
Dam Loan Subsidy from generator repayment	\$35,000 over 29 semi-annual payments	\$25
Cost of 3 Community Water Hookups	(\$750 per year)	(\$8)
<b>Total Funds available for Dues Reduction</b>		<b>\$573</b>

Each year at the Annual Meetings of both MKLA and Lakeshore, the Treasurer shows a Spending Plan that lists several years of past and future operating budgets, one time projects, Large Capital Reserve Fund (LCRF) projects and projects what our bank balances will be in each of the next 9 years. Using those same numbers and models, the charts below show what we would expect our beginning of year Bank

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<sup>14</sup> Our average annual investment in the Water System looking across 2004 through 2021, i.e. all years for which the Treasurer has any data, has been between \$17,000 and \$19,000. The range depends on how one treats some large expenditures in early years that were expensed, but probably should have been capitalized. It is reasonable to assume that the average revenue requirement in years beyond 2021 would continue at \$18,000 or higher.

Balances and our Large Capital Reserve Fund (LCRF) Balances to be for that same planning period in both the base case (i.e. retain ownership of the Water System – these are the exact numbers shown in January 2013) and the recommended case (i.e. sell the Water System, eliminate future operating costs & investments, and reduce dues by \$573 per member per year).



**Summary**

Several factors create a broad range of possibilities regarding future costs to any given household. It’s reasonable to consider bills in the event of sale to Aqua NJ as ranging from roughly \$335 annually (for single residence household) to \$875, with a

typical “average household” bill of \$605 annually, versus \$573 annual dues reduction per household, foregone if we retain ownership.



## *APPENDIX E – QUESTIONS AND ANSWERS*

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These notes contain questions, comments, and suggestions made during the Dec. 12, 2012 Inform Meeting, and subsequent questions posed by residents and by the WC itself. Slide numbers refer to that presentation, which is available on the MKL website. Items beginning with a “Q:” are questions, and are followed by lines beginning with “A:” which are answers. Most “Comments” are followed by “Responses”. Answers to questions or responses to comments, except where noted by names in parentheses, are from the Water Committee.

These items incorporate the items registered on the easel by Don Kuhn.

As new questions are asked, this document will be updated when the research into their answers is completed. As new questions are asked and answered the date of the question is also supplied.

This document was last updated on February 27, 2013 and reflects the fact that the Middlesex Water Company has withdrawn its bid because of changing priorities for 2013. Now only Aqua NJ America is bidding.

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- 1) Q: Who were the other Commercial Water Companies (CWCs) contacted?  
A: White Water Utilities Inc., NJ American Water Co., United Water. Southeast Morris County Municipal Utilities Authority Board (SMCMUA) was contacted subsequent to the 12/12/12 Inform meeting.
  
  - 2) Q: If the CWC bills Lakeshore (community meter) would they bill at a commercial rate?  
A: This option is not available through Aqua NJ.
  
  - 3) Q: Is Aqua NJ facing any material burden from Sandy damage?  
A: (Aqua NJ): “No.”
  
  - 4) Q: How many households are in the NJ water system and how many are served by wells?  
A: (12/22/12) According to the DEP there are approximately 8.8 million NJ residents. Of these about 7.9 million are served by Community Water Systems and .94 million are served by individual wells. Aqua NJ has indicated that 100% of the water they deliver in NJ is from “groundwater sources (wells).”

- 5) Q: Has the committee looked at leasing vs. selling the assets? Leasing would give us option to move to different provider.  
A: (1/9/13) Aqua NJ expressed no interest in leasing when asked by the WC.
- 6) Q to Aqua NJ: Briefly list any factors that would suggest why you would/or would not truck water from our system to other locations?  
A: (1/9/13) (Aqua NJ): "If requested by a government authority in the event of some emergency on a limited basis. Otherwise, your system does not have a sufficient abundance of excess water, nor the pumping capacity nor storage capability, and trucking water for any extended period of time would be cost prohibitive."  
6a) Q to Aqua NJ: Briefly list any factors that would suggest why you might/or might not find it attractive to try to link to our system other residents of Harding that are presently served by individual wells.  
A: (1/9/13) (Aqua NJ): "Most likely not. It is much cheaper for an individual to rehab an existing private well or drill a new private well than to connect to a nearby water system. Under your scenario, each resident looking to connect would be financially responsible for their pro rata share of the cost to connect. Doing so would be cost prohibitive for most people. In the unlikely event of some wide-spread failure of private wells or some environmental contamination preventing the use of these private wells, the EPA and/or DEP could subsidize the cost for these homeowners to connect to the nearest potable water supply system."
- 7) Q: Were the tariffs current?  
A: Yes, they are 2012 tariffs. They are now posted on the MKL website.
- 8) Q: What is basis for water use?  
A: We assume 250/gals per day per residence.
- 9) Q: What is included in the improvements proposed by Aqua NJ? Are the generator and the chlorine analyzer in the cost?  
A: Aqua NJ's bid includes about \$100K of improvements. About \$40K of the \$100K is for meters. The remaining \$60K includes gas generators, and chlorine analyzers. See slide 11.
- 10) Q: Is the amount Lakeshore plans to spend in its capital plan for the water system more or less than Aqua NJ will spend?

A: It is a bit difficult to compare. MKLA's capital plan estimates spending of \$182K between 2013 and 2019. This includes \$82K for Alpine main replacement in 2018. The current MKLA plan is given on slide 28 (a backup slide not shown at the Inform meeting). The CWCs said they will initially spend \$100K (of which \$40K is for meters) for upgrades. However they will also repair and replace any piping that gives them trouble. So they would replace the Alpine mains if necessary, and do many of the other repairs indicated in the MKLA plan.

11) Q: What has been the history of rate increases by the CWCs?

A: Between 5.5% and 6.5% per year. See slide 13 for an historical cost analysis.

12) Comment: The rates the CWCs would charge look attractive considering that MKLA has gaps in its insurance (e.g. product liability).

Response: The MKLA costs may rise if we buy more insurance.

13) Q: If the tanks are destroyed is there insurance coverage?

A: We are insured for the damage to the tanks, but we are not insured for the cost of delivering water while the tanks are repaired/replaced.

14) Q: Would we have to wait to put in the generator if the closing will take 1-2 years in the future?

A: If we buy a generator before the purchase is completed, Aqua NJ will reimburse us for its cost. (As a condition of this, they would want input into the selection of the generator).

15) Q: Do we know how much water we lose through leakage?

A: The average for water companies such as ours is about 10%. Later in the meeting, Ken Heiden asserted that about 1/3 of the water pumped was lost to leakage. Committee will investigate. See item # 58 and Appendix J.

16) Q: Would the CWC perform a leakage evaluation prior to taking over the system?

A: The CWC would perform a leakage test **after** taking over the system.

17) Q: Has Aqua NJ considered the cost of replacing the water tanks and mains?

A: Aqua NJ has performed on-site inspections of our system. They know what they are buying. The costs of replacing any aged infrastructure will, in effect, be borne by all (approx. 60,000) of their NJ customers. They receive reimbursement for their investments through rate increases for all their customers, if approved by the BPU.

- 18) Q: Did Aqua NJ ask about the 2 inches steel pipes?  
A: Aqua NJ is aware of the 2 inch steel pipes.
- 19) Q: Is Aqua NJ aware of the state of well #3?  
A: Yes.
- 20) Q: Is there a risk of Aqua NJ going bankrupt?  
A: Aqua NJ has been around more than 100 years, and is in solid financial position. Having said that, mismanagement could always produce a bankruptcy. In this case Aqua NJ would be liquidated, and its assets would probably be bought by another water company. In no case would MKL be left without a functioning water supply.
- 21) Q: If they go bankrupt would the community have a say in the transfer?  
A: Very likely not. This would proceed through a bankruptcy court.
- 22) Q: Would Aqua NJ be required to include more additives than a self-maintained system?  
A: No. The only additive required of a purchaser is chlorine. All water companies are held to the same standards in chlorine treatment of water.  
(1/9/13) Aqua NJ has indicated that they would not raise the chlorine levels above that are currently maintained by Agra Environmental, so long as NJDEP standards are met.
- 23) Q: How does the size of our system compare to the company's portfolio of customers?  
A: Most of their customers are larger than us, but they have as customers some in communities roughly the size of MKL.
- 24) Q: Slide10 indicates that Middlesex has only 60,000 of its 450,000 customers in NJ. Yet you say it is primarily a NJ company. How can that be? **This question is no longer relevant as MSW has dropped out of the bidding.**  
A: Most of the other customers are indirect – Middlesex sells wholesale water to other water companies.
- 25) Q: Where is Aqua NJ's nearest operations center to MKL?  
A: Sussex and Warren counties.

- 26) Q: Do you have a standard agreement for service quality standards (such as response time to problems, water quality, etc.) and road repair that we can review?  
A: (1/9/13) (Aqua NJ): “We do not. Such standards are set and enforced by the BPU and the DEP.”
- 27) Q: Chlorine is very corrosive to machinery. How frequently would the monitoring of our system be conducted by the CWC?  
A: Automated monitoring equipment would be installed to give daily chlorine readings. In person visits would occur approximately weekly.
- 28) Q: Was Southeast Morris County Municipal Utilities Authority Board (SMCMUA) contacted for interest in our system?  
A: SMCMUA was contacted subsequent to the 12/12/12 Inform meeting. They are not interested in bidding on the MKL system.
- 29) Comment: The risk to the MKL of its water system running dry is not listed on slide 19. The CWC would be responsible to bring the community water.  
Response: We have added that to the second row on slide 19.
- 30) Comment: DEP regulations change over time. There is no proactive planning at MKL on regulatory requirements. The committee should add this risk to slide 19.  
Response: We have added that to slide 19.
- 31) Comment: AWWA and NJ water source provide information on water regulation.
- 32) Q: What is the condition of our aquifer? Past validation of water during droughts showed we had plenty.  
A: (Chris Allyn paraphrased) Our source of water is through fractured rock. It is not one big pool of water. Pump #1 is an artesian well, and running pump #2 will reduce the artisan flow in well #1. (Jim Irving) During droughts the wells have had no drop in “draw down”.
- 33) Q: Would Aqua NJ’s NJ customer base be exposed to impacts of fracking?  
A: (1/9/13) (Aqua NJ): “None. Fracking is not permitted in New Jersey”

- 34) Q: Did Aqua NJ answer the question about selling MKL well water outside of MKL?  
A: (1/9/13) Aqua NJ answered the question subsequent to the 12/12 inform meeting. See items #6 & #6A.
- 35) Q: Would Harding need to approve the piping and sale of water to other customers?  
A: Yes.
- 36) Q: What are the min & max levels that the CWC would be allowed to chlorinate our water? Would the increase in chlorine be used to offset some insurance risks?  
A: CWCs are held to the same standards as MKL. These levels are available from the DEP. Aqua NJ would not raise the chlorine levels unless they failed to meet DEP standards.
- 36a) Q : Does Aqua NJ have a system wide standard for chlorine levels or does it vary depending on the conditions at a given locale?  
A: (1/9/13) Aqua NJ: "It can vary from one location to another depending on naturally occurring elements. NJDEP's standards are maintained at all locations."
- 37) Comment: The CWC might be incented to replace our mains due to the age of the pipes, but it is unlikely given the good condition of our 4 inch mains. Later comment: Law requires 6" mains so the CWC could use that as a basis for increasing investment.  
Response: The cost of main replacement would be borne by all 60,000 of the CWCs customers. Other than the dislocation of such construction, MKL would get a good deal.
- 38) Q: Do we have access to company client references?  
A: Yes. The committee will be checking references. The reference interviews will be posted on the MKL website.
- 39) Q: Who would pay for the meters?  
A: The CWC.
- 40) Comment: The pay back to start paying more than we are now for water would be over 7 years based on price difference.

Response: If the net proceeds of the sale were fully distributed to the community, it would have the effect of offsetting water charges for a number of years. Depending on the amount distributed and what taxes were owed on this distribution, it is reasonable to estimate that the price difference between what a CWC charges and what is paid in dues to upkeep the water system would be zero for five+ years.

41) Q: If community-wide (aggregate) metering were in effect, would leakage be built into the price? **This question is no longer relevant.**

A: Yes, the CWC would build in such leakage. Extraordinary spikes in usage would be investigated by the CWC. Other leakage, e.g. someone leaving a hose on, would be borne by the community if metering is community-wide. Metering at the houses removes considerations of paying for leakage in the system.

42) Q: Would the investment include adding non-existent curb-stops?

A: (1/9/13) If meters were installed, Aqua NJ has indicated that non-existent curb stops would also be added.

43) Q: How do the rates increase over time?

A: Slide 13 shows the history of rate increases. The average increase is about 5-6%/yr. The increases come every 2-3 years.

43a) Q: Is there any reason to anticipate that Aqua NJ's average rate changes over the last ten years would not be representative of future rate increases?

A: (1/9/13) (Aqua NJ): "No, but we cannot predict new laws and regulations that may be imposed by governmental authorities."

44) Q: Were there any requests by the CWCs to be able to access the lake water as a source?

A: (Dave Molendyke) No, lake water is not suitable for residential consumption.

45) Q: How did we pay for the repairs required for past large piping repairs?

A: The question is directed at the large MKL water expense spike in 2007. Because of bureaucracy at the state level, our payments for lake dredging were delayed. This delay allowed us to have sufficient cash on hand to pay for the spike in 2007 water system costs.

46) Q: Are there any notes from previous discussions by the MKL Boards with water companies?

A: (Chris Allyn): Check in the history room.

47) Q: If we go with a CWC will we face a higher Compound Annual Growth Rate (CAGR) in rates than the cost of self-maintaining the system?

A: It appears that the current MKLA CAGR for water expenses is about 1% - 2% lower than the CWCs' CAGR (this equates to \$6 - \$12 less per year).

48) Q: How far do we need to get into negotiation to see the CWC's contract terms?

A: We assume the CWCs have a generic contract and we will ask for it, if it is available. At this point both the committee and the CWCs are reluctant to do contact work until there is apparent willingness on the part of the community to sell. This may be a chicken-or-egg problem: Some residents may condition their vote on a contract, but we don't proceed to contract until we know that there is a sentiment to sell. Since we can't have 95 people negotiating the contract, we will need to defer the actual negotiations to the committee and the Lakeshore lawyer, with the MKLA and Lakeshore Boards approving the contract. What the committee needs to know is what terms/conditions are "show stoppers" for the community.

49) Q: How much due diligence have CWCs done on MKL's water system?

A: They have done on-site inspections of our water plant and have gotten historical records on operations (e.g. amount of water pumped, age of equipment, etc).

50) Q: Would the CWC need to perform additional due diligence when we decided to move forward?

A: If we decide to move forward the companies would need to perform some additional due diligence procedures in advance of the contracting process.

51) Q: Have the bidders talked to Agra Environmental? (note: Agra Environmental is a firm under contract to MKL to be its licensed operator for the MKL water system).

A: The committee has talked to Agra Environmental. Agra Environmental also has a relationship with the bidders, and possibly could be a sub-contractor to them in the event of a sale.

52) Q: What is Agra Environmental's viewpoint on the potential sale?

A: Agra Environmental has been helpful in helping the WC analyze the situation. Agra Environmental's position on sell/hold is neutral.



- 53) Q: Is there any benefit from a real estate perspective to have a CWC run the water system?  
A: This question was directed to the real-estate professionals in the room. No answer was recorded.
- 54) Q: Has it been easy or difficult to get volunteers to support the water system?  
A: The VSA is currently staffed. There was some discussion on whether or not in the future we would have the engineering-oriented skills necessary to support the water system. A suggestion was made to consider promoting to new residents an interest in maintenance and familiarity with the existing system.
- 55) Q: What is the financial impact on me if we sell?  
A: If you are an **average consumer**, you will see an increase in cost of water of about \$100/yr. These figures do not take into account the benefit of the net sale-proceeds, approximately \$700 per resident.
- 56) Q: What are the tax implications on sale of assets?  
A: We need to investigate the amount, if any, of the capital gains tax on a sale.
- 57) Q: Has the need for additional insurance to protect the community in the event of an impact to our water supply been discussed with the board?  
A: The Board is aware of the insurance questions. The WC is still investigating.
- 58) Comment (Ken Heiden): During the power outage the water usage was not significantly reduced, so there must be considerable leakage in the system. If we use residence meters, residents don't assume the cost of any leakage in the system (other than leaks in their own property). The average cost of metered water might be less than the \$600 the committee is using for CWC pricing. Ken believes there might be as much as 1/3 leakage of the amount pumped. Residence level metering would thus reduce the average metered bill by \$200/yr ( from \$600/yr to \$400/yr.)  
Response: We agree that the more leakage there is in the current system the lower the average bill will be if individually metered. However, our usage is believed to be about average for communities with our demographics. The WC will review volumes during the hurricane. See item #15.
- 59) Q: When conducting due diligence can you see if there have been any restrictions placed on other water systems after their takeover?

A: The committee will follow up on this.

60) Q: Might there be benefit in interconnecting with a local water company to provide back up?

A: The only local company with pipes nearby is SE Morris. They are not interested in purchasing the MKL water System (see item #28).

61) Suggestion – Put on website the follow up points that will be included in the due diligence.

A: The follow-up points (from the easel sheet) are included in this document, which is posted on the MKL website.

62) Q: Would the CWC increase water pressure so the hydrants can be used to fight fires?

A: The fire department seems to prefer pumping lake water to fight fires at MKL.

63) Q: When was the last time the rate of return was changed for the CWC?

A: both companies received rate increases in 2012, and seem to get them every 2 years or so. We are not sure when the actual rate of return itself was changed.

64) What restrictions on water use could the CWC impose on the community?

A: The main restrictions on use come from government authorities during drought. It is not in the CWCs economic interest to restrict water use.

65) Comment: Thanks to the Committee for its commendable work.

66) Q: Does Aqua NJ carry liability insurance for environmental contamination of the drinking water, which contamination could cause either (1) illness or (2) limit the availability of water and necessitate getting the water from a different source? Have you had instances of such contamination and, if yes, what has been the frequency, has it resulted in litigation and what was the general cost of resolution? We do not currently carry any insurance for such risks, but have discussed it. The costs for a small company such as ours could be high.

A: (Aqua NJ) Yes, but we have experienced no such instances.

67) Q (1/9/13): Does Aqua NJ's financial offer allow Lakeshore to receive adequate payment for what its water operations are worth?

A: The WC believes the ultimate test of something's worth is what the market is willing to pay for it. Lakeshore has received two independent offers for about the

same amount of money. Additionally four other companies declined to bid. So it would seem that at this time the market has spoken. A number of other metrics, e.g. ratio of price to yearly revenue, and a guesstimate at earnings on investment seem to be in the ballpark for the water system.

68) Q(2/20/13): Will a change of ownership from our existing status to a Public Utility have an impact upon the proximity restrictions of wells and septic systems?

A: The following from Gary Annibal of Harding Township: “There are septic system requirements regarding distance to potable water wells. The requirements are the same regardless if the well is private, public community or public non-community and are irrespective of the owner of the system.”

69) Q(2/20/13): What are the rights of a Public Utility with regards to accessing or traversing private property? What were the circumstances surrounding the gas line extension from Trails End to the non-MKL property located to the north - alongside the Tennis parking? Should a well fail, how much input would MKL have as to the location of a replacement well?

A: So far as the WC knows, utilities must seek the permission of private property owners, and in some instances pay them compensation, for easements on their property. The circumstances of the gas line extension across MKL property were these: the property owner approached MKL requesting permission and MKL negotiated a specific right of way agreement with the utility. The utility could not have proceeded without the agreement. Regarding a well failure, the WC assumes that the next logical place for another well would be on Lakeshore property. Indeed a third well was started near pump house 2 but never completed. So that location would seem to be a first candidate – it has easy access to the water mains that fill the tanks but would need improvement in order to be used.

70) Q(2/20/13): Will MKL residents share in the cost of the liabilities related to Aqua NJ’s other 60,000 customers? What are the liabilities presented by those customers and their potentially equally aged systems? What has Aqua NJ identified as their anticipated expenditures on behalf of their existing customers for the next 5-10 years.

A: As mentioned slide 8 of the 12/12 Inform presentation, MKL would be in a “pool” of water properties and through charges to its residents would “pay” for upgrades throughout the pool. Likewise the pool would pay for upgrades to the MKL system. While it would be desirable to be in a pool needing little investment

(so that the pool would pay for MKL updates, but not vice-versa), that likely is not to be the case. In its investigations, the WC has seen good, average and poor systems recently added to Aqua NJ's NJ pool. As a for profit company, Aqua NJ is interested in profiting from its investments in running and upgrading water systems. As slide 7 indicates, the BPU is the arbiter of what improvements the company gets to include in rate increases. While Aqua NJ has little incentive to make improvements for which it can't charge, it is also incented to provide water efficiently. Here is Aqua NJ's forward looking statement from its 2011 10K report related to capital improvements (figures are in thousands):

Our planned 2012 capital program, exclusive of the costs of new mains financed by advances and contributions in aid of construction, is estimated to continue at similar levels as 2011. The 2012 capital program is expected to include \$127,639 for infrastructure rehabilitation surcharge-qualified projects. Our planned capital program includes spending for infrastructure rehabilitation that qualifies for infrastructure rehabilitation surcharge mechanisms, and should these mechanisms be discontinued for any reason, which is not anticipated, we would re-evaluate the magnitude of this portion our capital program. Our 2012 capital program, along with \$80,765 of sinking fund obligations and debt maturities, and \$166,455 of other contractual cash obligations, as reported in the section captioned "Contractual Obligations", has been or is expected to be financed through internally-generated funds, our revolving credit facilities, the issuance of equity, and the issuance of long-term debt.

Future utility construction in the period 2013 through 2016, including recurring programs, such as the ongoing replacement or rehabilitation of water meters, water mains, water treatment plant upgrades, storage facility renovations, and additional transmission mains to meet customer demands, exclusive of the costs of new mains financed by advances and contributions in aid of construction, is estimated to require aggregate expenditures of approximately \$1,104,000. We anticipate that less than one-half of these expenditures will require external financing with debt and the additional issuance of common stock through our dividend reinvestment and stock purchase plans. We expect to refinance \$219,941 of sinking fund obligations and debt maturities during this period as they become due with new issues of long-term debt, internally-generated funds, and our revolving credit facilities. The estimates discussed above do not include any amounts for possible future acquisitions of water systems or the financing necessary to support them.

71) Q(2/20/13): Does the BPU have data that guides the purchase of a water system on a per customer basis. Participation by a single bidder may also indicate that this is not the time for your asset to reach the market. It just seems that \$200,00 (purchase price plus improvements) might be inexpensive for +/- \$3 million (guesstimate) of in-place infrastructure, along with a guaranteed \$56,000 in annual revenue that comes with a +/-6% annual increase for perpetuity.

A: Aqua NJ indicated they were constrained in their offer by BPU considerations and Middlesex Water Company said the maximum the BPU will allow for a new hook-up to a house as a recoverable expense is \$2,000, which is close to Aqua NJ's offered purchase price plus first year's improvements. The WC does not believe that the BPU sets a standard for purchases but merely approves them if they are reasonable. MKL had two offers, both in the same price range.

Additionally 10-15 years ago Lakeshore received another offer in the \$40K range. Bringing that offer forward in time (say \$45K at 5% inflation over 15 years), MKL has had three offers in the same range. The WC believes we are not likely to get a higher price. Having said that, the actual price is not, in the WC's opinion, a determining factor in the consideration on whether or not to sell. The determining factors in the WC's recommendation will be outlined in the WC's forthcoming report to the board.

\$3M is probably in the ballpark to replace the entire MKL water infrastructure. Much of this infrastructure is outdated (e.g. 4" water pipes vs. current standard of 6", beer tank used as water tank). The \$56K/yr is revenues. Lakeshore's annual water expenses run about \$47K/yr. Assuming the same for Aqua NJ, this would give them a \$9K pre-tax profit on their \$97K (+\$100K) investment. However, this is irrelevant, because their business model does not work this way. As a regulated monopoly they make their money by operating and upgrading water systems. If they chose to replace all the distribution pipes (WC estimate of \$1.7M) they could charge that to the "pool" (if approved by the BPU) and make a profit thereon (also charged to the pool).

72) C (2/2013): Please disclose any financial interests that members of the WC have in Aqua NJ America.

A: None of the members of the WC owns stock in Aqua NJ or any of its competitors. Other than the MKL purchase transaction, no member has any financial interest, or friends/family, etc., in Aqua NJ or its competitors.

## ***APPENDIX F – AQUA NJ REFERENCE CHECKS***

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### ***Summary of Principal Findings from Interviews with Representatives of Water Systems previously acquired by Aqua NJ NJ***

*NOTE: A 24 questionnaire was used for all interviews. Complete notes for each of these are posted on the Association website. The summary below focuses on the principal findings. The number of the question for which answers are summarized is indicated in parentheses at the start of each summary.*

Representatives of the following five water systems acquired by Aqua NJ between 2009 and 2012 were interviewed by committee members. The original ownership of each is also indicated. Note that the ownership of these systems was: 1 municipal, 1 neighborhood association, and 3 private owners/developers of the neighborhoods served.

- Wallkill Water & Sewer Company, Hardyston Township, Sussex County. Owner: Nick Rizzo
- Vernon Water Company, Vernon Township, Sussex County. Owner: Mike Janel
- Harkers Hollow Heights Water Association, Harmony Township, Warren County. Owner: Harkers Hollow Heights Water Association
- Bloomsbury Borough Water Utility, Bloomsbury Borough, Hunterdon County. Owner: Bloomsbury Borough
- Tranquility Springs Water Company, Green Township, Sussex County. Owner: Frida Salvigsen

(Q#3) Age of systems: 1950's to 2002

(Q#4) Source of water: 4 have wells; one has a reservoir

(Q#9) Reasons for selling:

- Losing money; system required updating
- State regs imposed on small operations would have required substantial investment; no volunteers to take over operation
- Insufficient ROI for owner
- State required capital upgrades; manual meter reading too expensive
- Company bleeding money

(Q#10) Has Aqua NJ maintained the system satisfactorily: 1 cited daily visits; 3 said “very” or “excellent”; 1 commented that customers were not happy with the response to Sandy but residents had water throughout.

(Q#12) Aqua NJ response time to problems: 3 indicated very prompt; 1 no answer; and 1 interviewee not aware of day-to-day operation since sale

(Q#13) Aqua NJ-installed upgrades:

- New meters read by radio from curb
- Chlorinating equipment
- Reconfigured pump house
- Replaced older piping
- Repaired reservoir

(Q#14) Any restrictions or major changes: 5 said no

(Q#15) Community concerns at time of sale:

- More comfortable with system being managed by public utility rather than local management

- 3 said none
- Initial concern about rates based on a third party but capital investment needed would have generated higher rates

(Q#16) Billing problems: All 5 reported none or not aware of any

(Q#18) Raising of chlorine levels: 2 were unaware of any change; 1 said slightly; 1 indicated increase to meet State standards; 1 no comment

(Q#19) Complaints of tasting chlorine: 4 no; 1 no comment

(Q#20) If you had to do it over, would you go with Aqua NJ:

- Highly recommend them
- Yes
- Yes, highest monetary offer
- Absolutely, should have done it years ago
- Aqua NJ was only bidder

(Q#21) Transition time once decision was made to sell:

- More than a year
- 6-12 months
- 6 months
- Not directly involved in transaction
- Took forever



# ***APPENDIX G – AQUA NJ’S SERVICE TRACK RECORD***

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## ***Discussion with the New Jersey Bureau of Public Utilities***

On January 24, 2013, Don Kuhn contacted the Division of Water, New Jersey BPU, to inquire whether that office had any information concerning the operations of Aqua NJ New Jersey that would be relevant to the MKL Water Committee’s due diligence concerning a possible acquisition of the Lakeshore Company’s water system by Aqua NJ.

Ken Welch in the Division of Water indicated that the Division has had no major problems with Aqua NJ. The Division of Water is specifically involved with the review of applications for rate changes.

Ken agreed to contact the Division of Consumer Assistance within the BPU to determine if they had any relevant information. He provided the following for both Aqua NJ New Jersey and for New Jersey American Water Company (to provide a basis for comparison):

	<b>Aqua NJ New Jersey</b>	<b>NJ American</b>
# Customers	37,000	612,000
# Complaints in 2012	36	611

There was no explanation for the difference in size of the customer base for Aqua NJ as compared to that shown in other information about the company that cites a NJ base of 56,000.

## ***Report from Better Business Bureau***

As of January 2013, the Better Business Bureau of New Jersey reports seven (7) complaints against Aqua NJ New Jersey during the past three years. All were related to billing/collection issues.

Complaints by date:

2/1/2012

3/1/2011

12/23/2010

9/27/2010

5/27/2010

The above were all resolved with BBB assistance. In addition two complaints (no dates furnished) were handled as follows:

- 1) BBB did not receive a response from the business
- 2) BBB found business made good faith effort to resolve complaint but customer not satisfied with business response

## ***APPENDIX H – MINUTES FROM BOARD DISCUSSION WITH BOARD OF HEALTH***

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JSM 1/ 2013

### **January 29, 2013**

Gary Annabal met with Austin Godfrey, Rick Barrett, Bob Edgar, Tawyna Kabnick, and Joyce Murray to answer some of the questions that had been posed by community members at the inform meeting held in December. Our meeting was to continue fact finding on the issue of risk. The well head projection area map shared at our Board meeting on January 7<sup>th</sup> was provided by the NJDEP and was done for all public/community water supplies. The map showed areas where something introduced into the environment would take 3/5/10 years to reach a water source.

**Question:** How deep are our wells?

**Answer:** 200 and 275 feet

**Question:** Can septic reach our wells?

**Answer:** No, septic cannot get to lower areas. It is able to get to the lake. Septic goes through a field of bacteria virus which latches on to the nutrients which take each other out and convert to oxygen. Septic is under the influence of surface water and cannot get to the lower areas. Casing is a solid pipe and in the lake's case goes 50-60 feet into bedrock beyond the soil of 8-20 feet.

**Question:** What about spills?

**Answer:** Surface spills tend to stay at the surface. Protected below that top layer. Surface spills are under the influence of the surface water and not in deeper areas. Petroleum discharge has a lot of the components leached out.

**Question:** What is the life of a casing?

**Answer:** Casings are made up of 19 pound heavy gauge equal to a one foot casing. 100 year casings with no problems are common. When a casing might fail, it will be near the top and exposed. A common bacteria is coliform. Water is tested for coliform once a month. The state monitored and remediated the old Sunoco area. Its materials flowed down 202 toward the Passaic River. Since 1960 wells have been tested.

**Question:** Can you tell us about oil tank leaks?

**Answer:** When a tank leaks, it is removed and soil samples are taken and continue to be taken until no more hydrocarbons appear. The oil leak on Blue Mill at the Deer estate moved a bit but never made it to the stream. Gary said he has never seen it go down 200 feet in NJ.

**Question:** What exactly does fracture rock mean?

**Answer:** It appears 10 to 20 feet below topsoil and is made up of rock basalt (hardened lava) is not solid and has cracks intersecting. Cracks are the faults on the order of tens of feet long not hundreds. It is unlikely for anything from the surface to get into the water. NJ geologists have great records. They have walked the areas and house sales require data which also gets recorded. 202 (our side) is shale; Post Hose Road is highland complex.

**Question:** What about bacteria contamination?

**Answer:** Coliforms are not necessarily harmful. It can mean other 'stuff' is present. As water comes out of the pump house chlorine is added. DEP tests the water at its further most point. It makes no difference whether it is a close, middle or a far end test. Gary never heard of it being a problem anywhere in NJ not just at the lake. The VSA type of testing is the recommended type used by water companies. Our system is not a loop. Many systems are not and if we flush the system once a year (which we do) that is sufficient. Water sitting at the end of a line may develop a zooglea-like slim that causes odor but is not a health issue.

**Question:** In the summer can our tanks get so hot that they build up a bacterial level on the top layer?

**Answer:** With 30,000 gallons coming into the tanks at a temperature of 50-55 degrees each day, it is unlikely that the temperature could get hot enough. Gary had never heard of it happening. You could check around the United States with any of the hundreds of small water companies but it is unlikely. Go to EPA.gov.

# ***APPENDIX I – MINUTES FROM BOARD DISCUSSION WITH CHRIS ALLYN AND MAX HUBER – JANUARY 2013***

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New Business –

Water Company:

Chris Allen introduced Max, our representative from Agra who came to discuss the implications of selling the water company and answer questions.

Below are the primary items

- Currently our VSA volunteers do daily readings on the water quality. Other water systems use machines to check water quality, which would cost us about \$20,000 (one time cost). Using the computer Agra can monitor our system and only come out if there is a problem. Agra costs will not go up appreciatively if we used this machine to monitor our system.

- Max complemented The Lakeshore Company on being very organized and well run but warned that some problems occur with water companies who don't pay attention. The pump houses need to be kept dry and clean and the system maintained.

- He said that the water quality should not change unless hit by a meteorite. These are not surface wells and there are no surface contaminates in the ground water. Austin mentioned that our septic goes into the surface water and then get filtered like all other water.

Question: What about contamination upstream. Response: Unless there is a huge amount of building he felt it was unlikely we would be affected.

Question: What about oil? Response: it would have to be a huge oil spill to reach the wells and in the worst scenario it can be filtered.

Question: What about mercury? Response: mercury is that it is a byproduct and is not likely. There was an issue in great swamp which was remediated.

Question: What about the MEPV gas additive? Answer: This is hard to scrub out of a water system but it can no longer be used.

Question: what about DOT volatile organics. What if a truck turns over on 287 could it get in the system? He said it is possible but we can clean most anything.

Question: Barbara asked if we need additional insurance. He doubts anything will happen but said Agra has \$5,000,000 in liability insurance.

Chris presented DEP maps modeling the area surrounding our wells and showing a timeline for how long it would take a substance to reach our wells if not cleaned up and remedied. For example a spill on 287 may take 3yrs and 202 5 yrs. A known contaminated site was the gulf station  $\frac{3}{4}$  of a mile away. This spill was remediated is monitored and never traveled more than 300 ft. The board thanked Max for his time and information. There will be an update to the board on their findings after their next committee meeting.

Board positions: Joyce made a motion that board members keep their current positions and our new board member, Bob Edgar take on clubhouse maintenance. The motion was approved.

Resolution: Austin would like a change in the by-laws to read that the Treasurer or Secretary take over in the event that the President is unavailable.

There will be a TGIF hosted by the board prior to the annual meeting.

Meeting adjourned at 9:22 pm

Respectfully submitted, Tawnya Kabnick

## *APPENDIX J – ESTIMATED WATER SYSTEM LEAKAGE FOR MKL*

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As prepared by Ken Heiden, February 28, 2013

The Hurricane Sandy power outage was an excellent opportunity to evaluate the water-use characteristics of our Lake community. The outages, being in the late fall, eliminated most of the water-use variables that apply to other times of the year. These include lawn, garden, and tennis court watering, car and deck washing, and underground irrigation systems.

The quantity of water pumped during the two week, water-restricted outage, (10/29 - 11/12/2012), was compared with a two week period in early December. Corrections were made for the number of houses occupied, the water tank levels, and the time of day of the measurements. Estimates of per-house water use during and after the outage were made, so a total system water usage could be determined.

	<b>Outage</b>	<b>Post-Outage</b>	
Water Pumped gallons/day	17,400	24,300	Water leakage calculations were made for both low and high water-use houses. The low water use breakdown is as follows: <ul style="list-style-type: none"> <li>• Outage use: shower 10, sink 15, toilet 15, laundry &amp; dishwasher 0 = 40 gal/day</li> </ul>
Number of Occupied Houses	75	90	
<b>Low Estimate</b>			
Usage gallons/House	40	100	
Total Usage gallons/day	3000	9000	
<b>Implied Leakage</b> gallons/day	14,400	15,300	
<b>High Estimate</b>			
Usage gallons/House	90	150	
Total Usage gallons/day	6800	13,500	
<b>Implied Leakage</b> gallons/day	10,600	10,800	
	<ul style="list-style-type: none"> <li>• Post outage use: shower 25, sink 30, toilet 15, laundry &amp; dishwasher 30 = 100 gal/day</li> </ul>		

This 100gal/day low estimate is in line with Aqua's customers in Warren County, who undoubtedly have expensive septic systems to protect, as we do.

In all cases the implied water leakage is over 10,000 gal/day and is consistent depending on the assumed house usage. Another indicator of significant leakage is that the pump goes on throughout the night to maintain tank water level.

Ken Heiden  
VSA Coordinator