SHARON WATER MANAGEMENT ADVISORY COMMITTEE (WMAC) MEETING MINUTES FOR JULY 1, 2004

Prepared by Paul Lauenstein

Present at meeting:

WMAC Chairman Rory McGregor; WMAC members Jack Sulik, Len Sekuler, Cliff Towner, and Paul Lauenstein; DPW Superintendent Eric Hooper, Selectman David Grasfield; Finance Committee member Charles Goodman; and citizen Alice Cheyer

Summary of Minutes for the 7/1/04 WMAC Meeting

1. Conservation Commission's groundwater recharge initiative

2. Approve minutes of the June 10, 2004 meeting (with alterations)

3. Pumping and tank level data for June

4. Annual Statistical Report

5. Discuss and approve new procedure for notification of WMAC members about water matters on the Selectmen's meeting agenda

6. New well sites update

7. Water Conservation Subcommittee update

8. Water Master Plan and Metcalf & Eddy report

9. Water quality report

10. E-coders for radio meter system

11. Schedule the next meeting for Thursday, July 29 at 7:30 PM

Detailed Minutes for the 7/1/04 WMAC Meeting

1. Conservation Commission's groundwater recharge initiative

Rory McGregor said the agenda of the concurrent Conservation Commission meeting in the adjoining room included discussion of a plan to retain storm water runoff in Sharon. He suggested that the WMAC should consider listening to the discussion since it pertained to Sharon's water supply and asked Cliff Towner to share what he knew of the plan with the WMAC.

Cliff Towner said Sharon has a serious shortage of groundwater. He explained that rainfall is the sole source of Sharon's water supply, and that Sharon is higher than surrounding towns. Clearing streambeds of debris and ditching wetlands to control mosquitoes over the years have accelerated the rate at which storm water drains out of town. Thus, runoff from rainstorms flows quickly out of town instead of

soaking into the ground, compromising recharge of ground water and aquifers that provide Sharon's drinking water. Above average rainfall in recent years has masked the problem, but sooner or later a drought will result in a serious water shortage.

Len Sekuler asked for specifics on a plan to address the problem.

Cliff Towner said that the Conservation Commission presently has no formal plan in writing. He said knowledge of how to optimize groundwater recharge will evolve from hands-on experience over several years.

Alice Cheyer asked about rip rap and plantings to slow stream flow and suggested that the Conservation Commission and the WMAC should meet jointly to discuss this issue since both wetlands and drinking water are involved.

Rory McGregor asked how much the project would cost and where the money would come from.

Cliff Towner replied that the cost would be modest. Some of the $50,000 in Water Department funds allocated for water conservation in FY '05 could be used to purchase materials. Volunteer labor from groups like the Boy Scouts may be available. He added that the Norfolk County Mosquito Control is supportive of this project.

Eric Hooper objected to using Water Department funds earmarked for water conservation, contending that groundwater recharge does not qualify as water conservation. He said a reserve fund transfer would be necessary to fund this project. He also asked who would serve as applicant, and said that it could not be the Conservation Commission since they must issue the order of conditions.

Cliff Towner replied that no applicant has been yet been specified, since there is not yet even a draft plan on paper. He said that the Board of Selectmen would determine where the funding for this project would come from. He added that few people in town are aware of the problem because few people are familiar enough with the town's geography. Interviews with older residents suggest that stream flows in Sharon are considerably less than in past decades.

Charles Goodman said the $50,000 allocation for water conservation would be an appropriate source of funds for recharging Sharon's aquifers, whereas a reserve fund transfer would be inappropriate. He added that the WMAC only serves as an advisory committee and has no budget of its own.

2. Approve minutes of the June 10, 2004 meeting (with alterations)

Eric Hooper, referring to a memorandum to the Board of Selectmen dated June 28, 2004, responded to comments in the June 10 WMAC minutes attributed to Conservation Agent Greg Meister which implied that the Water Department had failed to promote water conservation in the past. He said the 1995 Notice of Non-Compliance received by the Water Department from the DEP was not for failure to implement water conservation measures. He said the only other Notice of Non-Compliance from the DEP (January, 1997) had to do with failure to report nitrate concentrations.

The June 10 minutes were approved with clarifications by Len Sekuler and Eric Hooper.

3. Pumping and tank level data for June

Eric Hooper distributed copies of daily pumping records for the six town wells, as well as graphs of the four water storage tanks, for the month of June. He pointed out that thanks to the new 16" water main recently installed along Depot Street, water levels in the Upland Road tank now drop in response to peak demand associated with lawn watering synchronously with the other three tanks. This indicates that the Upland Road tank now contributes more to the grid when demand is high than it did before the Depot Street water main upgrade. Eric Hooper pointed out that it is difficult to directly compare the drawdown in gallons in each of the four tanks because the scales of the Y-axes of the tank graphs are different, and because the Hampton Road tank is ball-shaped rather than a cylinder like the other three tanks.

Eric Hooper added that the hydraulic model correctly predicted this outcome.

Len Sekuler asked how June, 2004 pumping compared with that of prior Junes. Eric Hooper replied that differences in rainfall from year to year affect demand, making it hard to compare.

4. Annual Statistical Report

Eric Hooper responded to a list of ten questions prepared by Paul Lauenstein about the Annual Statistical Report submitted by the Sharon Water Department to the DEP.

In response to a question about erratic monthly totals reported under "Amount pumped from own sources," Eric Hooper explained that the total amount billed was erroneously reported instead of the total amount pumped. The total amount billed varies widely from month to month due to the way the town is subdivided into six sections for reading meters. Furthermore, the amount billed is less than the amount pumped due to fire fighting, hydrant flushing, municipal use and unaccounted for water.

In response to a question about why the sum of the percentages for each category added up to 105% instead of 100%, Eric Hooper said a typographical error led to residential use being reported as 77.73% instead of 72.73%.

In response to a question about why the section for indicating the breakdown of unaccounted for water was left blank, Eric Hooper said that in prior years if unaccounted for water did not exceed 15% it was not necessary to report the breakdown. In 2003 it was 13.46%. However, as of 2003, the rules changed and the breakdown of unaccounted for water must be reported regardless of the amount. He said the breakdown should have been reported for 2003.

In response to a question about why unaccounted for water in 2003 (76.6 MG) was about 35 million gallons more than 2002 (41.5 MG), whereas residential use in 2003 (414 MG) was about 37 million gallons less than 2002 (451 MG), Eric Hooper said residential use declined due to higher summer rainfall, which reduced the need for lawn watering. He added that lawn watering restrictions were tightened from 3 hours to 2 hours in July, 2002. He said that unaccounted for water is typically high one year and low the next due to the 6-month staggered billing cycle. Last year (2003) was a high year.

Len Sekuler asked if quarterly billing would solve the problem. Eric Hooper said it would, adding that a radio meter system would facilitate more accurate accounting for water.

Paul Lauenstein asked why the category "Other Area" was up so sharply in recent years. He pointed out that in 1999 and 2000 this category was under 14 million gallons each year, whereas in 2002 and 2003 it was over 37 million gallons each year. He said it was puzzling that both "Other Area" and "Unaccounted For" categories had increased so much, given that total water pumped was virtually the same in 2003 as in 2002.

Eric Hooper said it had to do with more aggressive hydrant flushing and higher estimates of leakage losses submitted by the contractor hired to detect leaks in the town's water mains. These estimated leakage losses are classified as "Other Area" rather than "Unaccounted For" since the cause and approximate amount of the losses are known.

Paul Lauenstein commented that the Annual Statistical Report form required by the DEP is confusing. Would a printing business be classified as "Commercial" or "Industrial/Agricultural?" Would a private academy be classified as "School" or "Institution?" If different towns resolve these ambiguities in different ways, aggregating the data statewide becomes meaningless.

Eric Hooper's written response to Paul Lauenstein's ASR questions spells out how Sharon classifies water users as follows:

"Other Area" is known volume from non-billed uses such as the annual hydrant flushing program, leaks, dirty water flushing (not part of the annual program), water breaks, and station use (for instance during sample collection and other maintenance).

"Industrial/Agricultural" is billed irrigation water.

"Commercial" is billed commercial accounts.

"School" is non-billed School Department accounts (School Administration Building and all schools, including irrigation use), whereas "Institution" is Town related non-irrigation (recreation) non-billed accounts (DPW, Police Station, Fire Station, Town Hall).

"Recreation Area" is non-billed Recreation Department accounts (Deborah Sampson fields, Deborah Sampson snack shack, Town Beach, Community Center, Walter Griffin Field) and the non-billed Community Garden.

Paul Lauenstein remarked that the permitted amount for the Taunton River watershed should have been 0.29 MGD instead of 0.79 MGD, and the watershed difference should have been –0.269 MGD instead of 0.269 MGD.

There was no discussion of whether or not a revised Annual Statistical Report for Sharon would be filed with the DEP.

5. Discuss and approve new procedure for notification of WMAC members about water matters on the Selectmen's meeting agenda

Rory McGregor acknowledged that WMAC members were not notified that the proposed radio meter system would be taken up at the Tuesday, June 15 Selectmen's meeting, where it was approved by a 2-1 vote. He said he assumed it would be discussed on June 15 in order to allow time for the Water Department to encumber the $150,000 for Phase I of the radio read meter system approved in the FY '04 budget that expired on June 30. The Town Administrator invited Rory McGregor at 6:00 that evening to be present at the 7:30 meeting. Rory McGregor said it was not posted on the regular agenda but it was posted as a supplemental agenda item shortly before the meeting.

It was agreed that in the future WMAC members would be notified via email when significant issues concerning Sharon's water supply will be addressed at Selectmen's meetings.

6. New well sites update

Eric Hooper reported that no samples have yet been taken at the cemetery near the proposed Canton Street well site. He assured the committee that results would be available by the July 29 meeting.

Rory McGregor asked when access would be granted to drill exploratory test wells at the Gobbi site.

Eric Hooper said the new owner, Intoccia, has not yet granted access.

David Grasfield said Intoccia had acknowledged the town's need for a new well site. He said that if the land remained zoned residential, Intoccia would need space for a wastewater treatment plant, making it difficult to site a well there. On the other hand, if the land were rezoned commercial, it might be easier to accommodate a town well on the property because a commercial development might not need a wastewater treatment plant.

Eric Hooper reported that the 30-acre Maskwonicut Street site had been purchased.

Paul Lauenstein asked what the price was in relation to the $500,000 voted at the January 15, 2004 WMAC meeting.

David Grasfield replied that the price was $790,000.

Eric Hooper said that even though the price was considerably higher than expected, the consequences of a 40-B development would have been worse for the town.

7. Water Conservation Subcommittee update

Paul Lauenstein reported on a questionnaire listing 11 possible water conservation initiatives. He said the aim is to identify the best two or three ideas from the list that would save the most water with the least resistance from residents. He said that he would compile the results after all members had responded to help decide which water conservation initiatives to undertake first.

Len Sekuler suggested that each WMAC member should prioritize his top three choices.
Rory McGregor said he thought that the radio meter system should remain on the list as a way to facilitate water conservation.

Cliff Towner questioned whether Sharon needs more conservation measures than the lawn watering restrictions and block rates already in place. He said lawn watering is at the heart of the problem since it consumes large amounts of water when supplies are lowest.

Jack Sulik remarked that a xeriscaping seminar conducted at the Community Center was poorly attended.

Paul Lauenstein said reducing water use would reduce or eliminate the cost of importing water from MWRA or Aquaria.

Rory McGregor said the focus should be on reducing summer use.

Len Sekuler pointed out that a significant amount of water is wasted every summer by irrigation systems that water automatically regardless of whether or not the soil has enough moisture. He suggested that soil moisture sensors could be incorporated into lawn irrigation systems that would only allow watering when the soil is too dry.

Jack Sulik commented that soil moisture detection technology exists.

Cliff Towner said one inch of rain per week should be sufficient to maintain an established lawn with adequate topsoil. He said a 6" layer of rich organic loam absorbs and retains moisture, and sustains grass in summer. He said many contractors fail to provide sufficient topsoil, without which the underlying soil drains too quickly, requiring large amounts of irrigation water to keep the lawn green.

8. Water Master Plan and Metcalf & Eddy report

Eric Hooper said the recent Metcalf & Eddy report entitled "Final Hydraulic Model and Master Plan Update For Sharon, Massachusetts is not actually a master plan, its title notwithstanding. Rather, the hydraulic model and water storage tank are only components of a master plan. He said a Vulnerability Assessment and an Emergency Response Plan are being prepared this year, but a master plan update is overdue.

Eric Hooper recalled Richard Mandell's comment at the May 20 WMAC meeting that an independent peer review of the calibration of the hydraulic model might be needed. He said he personally believes the model is an accurate predictor of the behavior of the system. However, he suggested that a peer review might be necessary to instill confidence among WMAC members and others that the model's predictions can be relied upon.

Rory McGregor said there are two aspects of the model issue: questions about the mechanics of the model, and questions about what it should be used for.

Cliff Towner asked what the model indicates about the status of the town's water supply.

Eric Hooper replied that the model indicates a water pressure deficiency in elevated parts of town and a town-wide water storage deficiency.

Cliff Towner asked exactly where pressure deficiencies exist.

Rory McGregor replied that the Hampton Road area experiences low pressure.

Cliff Towner questioned the priority placed on increasing water pressure in the Hampton Road area, saying that the Moose Hill area is considerably higher than the Hampton Road area and therefore experiences lower pressure.

Eric Hooper said the buildings on Moose Hill are in close proximity to two of the town's four storage tanks. He said recent hydrant tests conducted as part of spring flushing in the Moose Hill area indicate over 20 psi of residual pressure and that a report on the testing would be ready soon.

Paul Lauenstein pointed out that accurate model predictions depend on both accurate calibration and accurate operation. He said that even if the calibration of the model were completed, there are many parameters that must be correctly specified in the model to simulate any given scenario. He asked how

the setup of scenarios could be independently verified, saying that drawing conclusions based on erroneous model results could be dangerous.

Cliff Towner said he believes the hydraulic model will likely prove to be a reliable tool, but he said the fire flow assumptions used in the modeling done by Metcalf & Eddy were unreasonably high.

Eric Hooper replied that he did not want to be the one to have to tell the fire chief that there was not enough water to fight a fire.

Cliff Towner commented that over-reliance on the hydraulic model without corroboration based on actual observations, past experience, and common sense could lead to faulty decision-making.

Rory McGregor replied that the model is a useful tool and should be used.

Eric Hooper explained that the accuracy of the model is influenced by the ability to accurately model the demand for water at each of the model's many nodes. He said each node's demand is presently assumed to be a function of the number of homes nearby. He said the demand for each home in the model is presently programmed to be equal to the town average, but acknowledged that in reality there is considerable variation from home to home and from neighborhood to neighborhood. For example, he said homes in the Hampton Road area typically use more water than homes in the Heights area, especially in summer, because of lawn watering. He added that over time it would be possible to fine-tune the model by programming each node to correspond to actual water usage of the homes nearby.

Rory McGregor commented that that kind of fine-tuning could take years.

Eric Hooper told the committee that Sharon's present DEP permit limits total annual pumping to 660 million gallons, with a maximum of 3.12 million gallons on any given day. He said new wells would offer operational flexibility but would not increase the permitted amounts. He said Metcalf & Eddy used lower Peak Hourly Demand (PHD) and Maximum Daily Demand (MDD) assumptions than those used in the Horsley & Witten report, and were reasonable. He said projected demand indicates that obtaining supplemental water from outside sources such as MWRA or Aquaria will be inevitable if total outside watering bans are to be avoided.

Eric Hooper concluded by saying that a master plan should address how the town should cope with rising demand for water given limited supply. He said the scope of a master plan should include such things as water conservation, infrastructure improvements, and demand projections.

Cliff Towner asked if conditions today were significantly different those prevailing when the 1991 master plan was done.

Eric Hooper replied that it has been 13 years since 1991 and a new master plan update should be done to assess the situation and serve as an action plan.

Cliff Towner pointed out that a 1997 master plan update called for two new wells by the year 2000, but no new wells have been built yet.

Eric Hooper said that demand has not risen as rapidly as anticipated in prior master plans.

Cliff Towner asked if it were really necessary to pay consultants to tell us that we need new wells and water conservation.

Rory McGregor said that until recently the focus has been on increasing supply to meet rising demand. He said the emphasis should now shift to reducing demand through water conservation.

Charles Goodman asked how much water the town pumped in the last two years.

Paul Lauenstein said in 2002 the town pumped 571 million gallons and in 2003 the town pumped 569 million gallons.

Charles Goodman said that meant there is still 90 million gallons per year leeway (about 15%) between current demand and the maximum permitted by DEP.

Eric Hooper cautioned that although the town's wells are capable of producing the DEP-permitted 660 million gallons per year, the daily limit of 3.12 gallons also constrain pumping.

Cliff Towner added that the critical period is about 120 days in summer, and that there is adequate water supply during the rest of the year.

Jack Sulik pointed out that capacity planning must assume that the town's largest well is out of service, and be ready to supply the town's needs without it.

Cliff Towner replied that bringing more wells on line would address that issue.

Charles Goodman asked if the DEP permit could be increased.

Eric Hooper replied that the DEP permit that limits the amount of water Sharon is allowed to pump daily and annually is reviewed once every five years, and is up for review this year. He said that the DEP has increased permitted withdrawals from 601 million gallons per year in 1991 to the current limit of 660 million gallons per year as the town's population has increased. However, the daily limit of 3.12 million gallons has not changed in that time, and the DEP may be reluctant to increase Sharon's permit in the future.

Len Sekuler asked when the Metcalf & Eddy report predicts that Sharon will require supplemental water from outside sources.

Cliff Towner pointed out that past consulting reports have overestimated the rate at which Sharon's demand for water would increase.

Alice Cheyer responded that new 40-B developments planned for the near future may accelerate demand for water in Sharon.

Eric Hooper said the town will have to evaluate its priorities. Is water independence important? Is a watering ban acceptable? Answers to questions like these will shape water supply policy. Water supply decisions have traditionally been responses to rising demand. In the future, DEP may require the town to manage demand through water conservation initiatives.

Rory McGregor said the WMAC should discuss objectives at the next meeting, and redirected the discussion to the Metcalf & Eddy report.

Eric Hooper asked if a peer review of the Metcalf & Eddy report should focus on demand projections, fire flow assumptions or other issues. He contrasted the ISO fire flow standard of 500 gpm with the 1500 gpm used in the Metcalf & Eddy report.

Cliff Towner said different consultants offer different opinions. He mentioned that the most recent Amory Engineering report drew different conclusions from the Metcalf & Eddy report. He asked if most commercial buildings are sprinklered.

Eric Hooper said commercial buildings in Sharon are sprinklered, but cautioned that large amounts of water may be required to fight a fire in a commercial building even if it is sprinklered.

Len Sekuler requested that WMAC members be afforded an opportunity to comment on the scope of a peer review of the hydraulic model, if one is conducted.

Paul Lauenstein requested that WMAC members be allowed to have input on the scope of a master plan update, when the next one is commissioned.

Cliff Towner asked how long it would take to prepare a master plan update, and whether a completely new master plan should be undertaken.

Jack Sulik said it would take six to nine months, and added that the WMAC was involved in the 1997 master plan update. He said he felt the difference between a master plan and a master plan update was one of semantics.

Cliff Towner said he thought an update by the same consultant would cost less.

Jack Sulik agreed, but said he thought a new master plan by a different consultant might provide fresh insights.

Rory McGregor said he thought self-sufficiency of water supply is a worthwhile objective.

Alice Cheyer asked if self-sufficiency is sustainable, given Sharon's population growth and limited water resources.

Rory McGregor said he believes that with a master plan oriented toward demand management and an effective water conservation plan it should be possible for the town to avoid the necessity of importing water.

Cliff Towner agreed, saying Sharon should attempt to maintain self-sufficiency as long as possible.

9. Water quality report

Charles Goodman commented that Sharon's water now smells of chlorine more than it once did, and asked if the chlorine concentration had been increased lately.

Eric Hooper said the chlorine concentration has been increased 10% to 15%. He said the federal government now requires higher chlorine levels because if there were a terrorist attack such as introduction of a bio hazard, a slightly elevated chlorine level could have a moderating effect.

Cliff Towner asked if tests for coliform bacteria were conducted on raw water or treated water.

Jack Sulik said only treated water was tested.

Eric Hooper said tests indicated presence of microparticulates but no coliform bacteria were found.

Eric Hooper said he added some copy to the water quality report to encourage residents to conserve water.

David Grasfield informed the committee that he approved 20 rebates for water-efficient washing machines in the past month.

10. E-coders for radio meter system

Rory McGregor raised the issue of whether or not to include e-coders with the purchase of the drive-by radio meter system from Ti-Sales. An e-coder is an encoder register that keeps track of whether or not water is running through the meter every 15-minute interval for a month, and indicates the probability of a leak. It costs an extra $10 per unit.

Paul Lauenstein asked if the contract for the radio meter system had been signed. He said there was no point in discussing e-coders if the system had already been ordered.

Eric Hooper told the committee that he made a verbal commitment to Ti-Sales and encumbered the $150,000 for Phase I of the radio meter project in FY ’04. However, no written purchase order had been issued, so the committee could debate and vote on whether or not to recommend the e-coders to the Selectmen at the next WMAC meeting.

11. Schedule the next meeting for Thursday, July 29 at 7:30 PM