



City of Madison

City of Madison
Madison, WI 53703
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Meeting Minutes - Approved WATER UTILITY BOARD

Tuesday, February 12, 2008

4:30 PM

119 E. Olin Avenue

CALL TO ORDER / ROLL CALL

Present: 8 -

Dan Melton; Lauren Cnare; George E. Meyer; Jonathan H. Standridge;
Gregory W. Harrington; Thomas Schlenker; Warren E. Onken and Michael
Schumacher

APPROVAL OF MINUTES

PUBLIC COMMENT

Carin Clauss of 3909 Priscilla Lane: She urged that in developing the process, and March 18 is almost upon us, her neighborhood thinks that getting it right is more important than getting it done by March 18. She hopes the Board will work with City Council to make the date one that permits public participation before submission to the Council. Larry Nelson said that is their goal is and why it's not on this agenda.

Mary Ann Halvorson of 11 Larkin Street: She asked if the obstructions (hoses) in the road are going to be removed this week and how long residents are going to have to put up with this. She noted that they have made it known that the neighbors are opposed. Jon Standridge said we're going to be talking to the Larkin Street and Sunset Village people in a meeting shortly after this meeting adjourns. Some of this will be addressed at that meeting, and we'll get a report on the Larkin Street well and that should answer your questions.

Bob Downing of 3901 Priscilla Lane: He said his frustration is that the process is just going on with no end date. If no one knows the end date, why weren't we told that? He doesn't think the board knows and he wants to know why. He said it's frustrating to all the residents of that area.

Jurgen Patau of 114 Alden Drive: He said in the report it continues to say that there is infiltration of the top layer of water into the lower layer. He asked if there is something wrong in the pumping mechanism or with the seal. He said the most crucial element to him is neighborhood input into the process before you write down one word on how you are going to do it.

REPORTS

2. [08953](#) Water Quality Report

3. [08954](#) Staffing Report

4. [08956](#) Operations Report.

Lauren Cnare asked about benchmarks. Larry Nelson said they are being worked on right now.

5. [08959](#) Engineering Report

Jon Standridge asked Al Larson if the video equipment was up and running yet. Al said it's up and it's working but it's not being transmitted back here yet. Jon asked if we have enough bandwidth to do what we want to do. Al said we do; it is guaranteed. Jon said the report says that Al talked to the two alders in the Raymond Road Reservoir area. He asked if Al has contacted any neighborhood associations yet. Al said we're trying to coordinate it with the alders.

6. [08960](#) Customer Service Report

7. **Steering Committee Report**

Janet Czerwonka and Tammy Buss presented the Steering Team's report. Accomplishments for 2007: Strategic Plan was put into operation. In April 2007 a steering committee was named to lead the implementation effort. They elaborated on goals to support the six strategies in the plan, added detail to major issues in the plan, and established measures for achieving goals.

The Steering Team chartered and populated seven Design Teams: Internal Communication, Water Conservation, Workforce Flexibility, Standard Operating Procedures, Work Practices, Vector and Customer Feedback Card.

They also worked in conjunction with the SCADA Team. Each Design Team was chartered with a purpose and specific goals. Long-term teams include Workforce Flexibility, SOPs and Work Practices. These three teams will complete their work by the end of 2008. The other teams have completed or will be completing their goals soon.

The Steering Team implemented monthly employee meetings led by Water Utility personnel. The team also conducted an employee communications survey to aid in developing a communication plan. Employees have commented that there is better information sharing at employee meetings as a result of this. Department heads and supervisors have assumed all hiring and discipline responsibilities with assistance of City HR.

Strategy 2 was to enhance customer satisfaction. A customer feedback card was designed and implemented. There are periodic updates on water quality, mapping and unidirectional flushing. The updates go to employees, the list serve, Water Board and alders.

Strategy 3 is to strengthen regional economic potential. Aspects include improved emergency outage door hangers in English, Spanish and Hmong. A SCADA replacement pilot project was started and a water conservation

plan is being developed.

Strategy 4 is Leverage Technology. Emergency and snow removal call-in lists have been established on computers. Supervisor on-call list was established. Refinements to main leak reports were done, as were security upgrades to the Operations Center. An AVL (GPS) system is now in use. Security cameras are being installed throughout Utility facilities.

Improvements in Engineering Department are implementation of a Water Main Project Database. An electronic version of main project record drawings (as-builts) has been created. A Unidirectional Flushing Plan has been developed for the entire city. Color aerial photos of the entire city have been installed on all field laptop computers. Also developed were new maps for meter readers, large system maps for conference room, new valve maintenance database, update As-built Submittal Checklist for inspectors, and a water main rating system.

Strategy 5 - Optimize Infrastructure Performance. Employees participated in task/skill identification, workplace change seminar and a mini-self assessment. An SOP form was developed for writing SOPs. Staff is being asked for input on decisions on equipment, buildings and training. A "Vactor" team was established to determine if the Utility should purchase their own unit.

Strategy 6 - Develop Sustainable Workforce. Safety training for employees is developed and under continuous refining. A chemical inventory was taken and two sets of Material Safety Data binders assembled.

The Madison Water Utility was honored by AMWA with one of its top management achievement awards, the 2007 Gold Award for Competitiveness Achievement.

The Steering Team submitted interview questions for use in interviewing candidates for the General Manager position. They also interviewed the six finalists.

They reviewed the six strategies of the Utility Strategic Plan and set goals for 2008.

Michael Schumacher asked how they see neighborhood communication fitting in with this type of an organization improvement plan, and how will they integrate these things into the next phase. Larry said this will be discussed at the meeting to follow. Lauren Cnare said most of the work is internally focused for organization effectiveness, and one of the big pieces of the puzzle that has not been put into place is the public information officer. Jon said there is an SOP on hold until the new PIO comes on board. George asked that the board's appreciation be passed on to the Steering Committee; Greg agreed and asked what the goals are for 2008. Janet said they have been working on that. They've established three new design teams and the biggest thing they will be doing is having three teams that work hand in hand-workforce flexibility, the SOP team and the work practices team. These will require a lot of time because they are very involved.

FINANCIAL REPORTS

8. [08966](#) Fund Balance Report

9. [08967](#) Capital Project Statement

Michael Schumacher made a motion to accept all of the reports. Lauren Cnare seconded; unanimously passed.

ADMINISTRATION REPORT

NEW BUSINESS

10. [08973](#) Update on Test Well Pumping at Reservoir Park

Ken Quinn of Montgomery Associates has been on a team working on the Larkin test well. The objective is to determine what the water quality would be in the lower aquifer at this test well location and to determine whether manganese concentration would be in the lower aquifer and would be acceptable. Pumping is needed because a large quantity of water went from the shallow aquifer down into the lower aquifer after the test well was drilled. That would affect the water quality compared to what we get from a well that was sealed only in the lower aquifer. A production well drilled at this location, per DNR requirements, would be sealed in only one aquifer, probably the lower aquifer so we would need to remove the water that went from shallow to the deep before we could get water quality that is representative of the deep aquifer at that location. We don't know what the deep aquifer water quality is so we are trying to get to that point. Ken presented a graph with examples of other deep wells for comparison purposes, and said that Larkin will probably be the same at the deep aquifer. Once that is achieved, the manganese concentration can be looked at.

Ken said the estimate on how long this would take was taken from the estimate of the flow rate that went down and how long the well was open. They did a preliminary model to estimate how long it would take to pump that water back up. Ken said they ran a model, came up with an estimate and then pulled out the pump that was in the well, put in a packer to seal off the upper aquifer from the lower, and then we found that more water had run down. The original estimate was that we'd have to remove 27 million gallons of water from the lower aquifer before we would start getting to water that was representative of the deep aquifer. There was about 50% more water that went down than we anticipated. The estimates are just that, estimates. The key here is to pump until we get water quality that looks good.

In sampling the test well weekly, looking at the tracer compounds, we saw an initial decline in these parameters but they've stabilized and haven't gone down any more. With chloride, we were expecting to go from 30 mpl down to about 5 mpl. This has nothing to do with health standards or water quality. Ken said they are still pumping out water that appears to come from the upper aquifer and not the deep aquifer. We can't be confident of the water quality of a production well that would be sealed only in the lower aquifer. That is why it is recommended that we continue to pump until we get to a situation where the water quality looks like its representative of the deep aquifer. George asked when the test was to be completed. Ken said 70 days was the estimate to remove 27 million gallons of water, which would take us to the middle of December. George said he'd like a detailed report on what

and why this happened and the cost. Lauren asked for a quick description as to why we got the mixed water. Ken said the Larkin Well has about 40 feet of steel casing and then there was an open hole down to about 1,000 feet. The Eau Claire shale is a combined layer that separates the shallow from the deep aquifer, and that is 425 feet. The shallow aquifer is higher than the lower aquifer and water was coming in and going down at about 15 gallons per minute. Lauren asked if it sprung a leak. Ken said without knowing the Eau Claire shale was present, this is the way the Utility constructed its test wells. Jon asked when the packer was installed and the well drilled, did we know it would be draining in there at 15 gallons per minute. Ken said the Utility didn't know, that the test to determine this was done by the WI Geological Natural History Survey. Jon said so there was no way of knowing this until past the fact. Ken said we recommend for future wells that they be cased all the way down through the Eau Claire shale.

Lauren asked at what point do we cut our losses, and why don't we start over as it looks like this could go on for a very long time. Michael said there is some decision in the process that didn't work, and asked what decisions were made to get us to this place. Ken said the water running down the hole does not always happen. Michael said to Ken that he said the next time he would put a casing down, so how does the Water Utility put in a procedure for the future. This is a costly endeavor and when do we know we've gotten the results we need. Jon said the ratio from last month to last September has gone from 100% to 85% and asked if we've removed 15% of the water we need to remove. Ken said it's not quite that simple. Jon said doesn't it seem we have one to two years of pumping before we get it cleaned up. Ken said no, it has to break through the curve and we don't know how long it's going to take to go down to the lower water quality. George asked the best-case scenario. George asked if we are going to be talking about this in May or October. Ken said no but he can't say when, that 53 million gallons have been pumped out. The modeling said we should pump out about 1½ times the amount that we lost. We think we lost around 27 million gallons. The modeling didn't take into account the discharging or the change in the water quality.

Jon asked what the chance is of another hole in the Eau Claire shale causing problems. Ken said that is a possibility. Information has suggested that is not the case, that there is a 40-foot head difference between above shale and below shale. There is reason to suggest the Eau Claire shale is continuous. Michael asked Ken what his recommendation is on how long this should continue.

Jon said the agenda item was an update, an education item, and the board doesn't have to accept or approve the report. This is an opportunity for the board and staff to put comments on the record. Larry Nelson said the purpose of this whole thing is to make sure we don't have another Unit Well 29 issue where the original test well came back with very good water, which this is, and later we ended up with a problem. These numbers are coming down very stubbornly. He said he is very surprised we've gotten through the severe weather without any mechanical problems. We have a fire hose underneath the snow bank. He'd like to suggest we go to the end of March and see where we are at that time. If we don't see this water quality changing at all, we will take that data and move on.

George said he likes the idea of short-term continuance. Michael asked if

he is saying we could have a well there. Larry said the results right now indicate that the water we have is good quality water. The risk is that if we would actually develop a well and then go all the way down, we could bring out higher iron or manganese than we have now. A filter would work but if the well has other issues, he's not sure how long we can physically continue this testing. Larry said it's expensive to run this test well, that we've already increased our costs 25% from what was anticipated. Michael asked if in the future we'd do that type of casing differently. Al Larson said the specs for test wells have already been changed and they will be cased all the way down through the upper aquifer.

Lauren asked if there is any way to move the hose from under the snow. Larry said he doesn't think anyone has actually seen the hose for some time, and it can't be moved.

Dr. Schlenker said he understands that the testing on this test well demonstrates that the water being produced comes at least in part from the shallow aquifer. That is after that hole has been plugged. We are not able to say whether we are pumping out water that seeped down prior to October and still haven't gotten to the end of it. That is what we're hoping, that someday we'll get to the end of that water, or be able to tell if there is ongoing leakage from the shallow to the deep aquifer. If we decided to put a permanent well in this location, drew up drinkable water in terms of iron and manganese and the other important measures, we'd know that water was from the shallow aquifer by the measurements. Dr. Schlenker asked if that is something we could live with. He understands that all of the water we produce in Madison comes from the deep aquifer and we are committed to providing deep aquifer water to our customers. Jon said we take a lot of water from the upper aquifer in many of our wells. Dr. Schlenker said so that does not exclude this as a possibility. Al said we have 23 operating wells and only three for sure are cased down to the lower aquifer, so we have 20 wells that are open to both aquifers. Jon said right now we're running 21, 22 ppb manganese. We see effects when it's 50, so if we're still getting 50% upper aquifer water and all the manganese comes from the lower aquifer, it could be that the manganese level is from the lower aquifer. We intend to take the water from the lower aquifer and it might be significantly higher than 21. That is what we're trying to figure out. If it's double or triple, then we have to do treatment at that well and we have to consider that from the beginning.

Michael asked if the next two or three weeks will give that data. Greg said at some time we have to make a decision, but we won't have a trend in two or three weeks. Larry said if we'd get a break he'd feel more comfortable with going to the neighbors saying this is going down. Warren Onken said he has a bad feeling about the whole thing. He thinks Well 29 proved if we don't have to worry about how much it's going to cost, we're going to pump good water. He doesn't think that is what we're all about and what bothers him is the ongoing cost here. There is tremendous uncertainty and we're already 60 days over; that is troubling. There has to be a resolution. Warren said he'd like to indicate a preference tonight, some element of certainty the end of March, or at the next Water Board Meeting or something. We need to make an informed decision. This doesn't look good.

Larry said we made a statement that we are going to put a test well in at Mineral Point Road and Whitney Way. That could also move really quickly but it could also have problems. This is relatively deep but it has risks to it.

Warren said establishing criteria early on needs to be part of your communication. He said he didn't realize the uncertainty of the situation, but when you're engaging the public in establishing your future criteria, you need to emphasize that this is open ended as well.

Jon asked if Warren is saying we should give Larry some advice on how long we'll go before we pull the plug. Warren said that is his preference. Michael said maybe we should look at these test sites to give a range of time rather than saying so many days. It looks like we should tell the public anywhere from two to four months, depending on what we find. He said since we're so far into this, two weeks might be too short. His preference would be sometime from mid to the end of March.

Dan Melton made a motion that we go to the end of February. Warren Onken seconded. George said what if at the end of the month there is a trend developing. He thinks two weeks is too short. If we do that, we might miss something. Greg said he's not recommending the date; he's just saying if we go to the end of the month we might be missing something. George said if at the end of the month we see a significant drop, we should consider continuing. He thinks two weeks is too short no matter what. Warren said we're looking for a break point. Dan said keep in mind that we are spending \$12,000 a week. This is not a favor to the Larkin Street people; it's a favor to the people of Madison. Larry said this is great water so if we're going to use this data, that means we could site a well if we pull the plug, now or in two weeks with the same data we have now. If we're wrong, that means we'll have to build a big enough building from the get-go. We're really committing to some things by not waiting to see what the rest of the data is. We're committing to some future expenses. We're committing right now that this is a viable site for a well, so we need to be careful. Jon said as a scientist, he doesn't care if it goes until June, as he'd like to see the data. As a board member, being responsive to the folks who want their neighborhood back without hoses running down the street, that is another consideration. Al said it costs \$4,000 a month or \$1,300 a week, so you're talking about \$2,500 to start with. Dan said on 12/31/07, we'd spent \$138,321. Now the total estimated cost is \$210,736. That is an increase of \$72,000 or \$12,000 a week. Al said power costs \$4,000 a month, a consultant costs about \$5,000 a month. Lauren asked if we wanted to run this longer if we find some criteria on which to make a decision. Part of the problem with this well site is that it is annoying for the neighbors with fire hoses, unsightly equipment, and a myriad of things. If we continue this until April, is there something that we can do to mitigate the site by cleaning it up, enclosing it and making the park as usable as possible during this period. Lauren said she's looking for ways to agree there is an end date but the end date might not be as soon as we want. She thinks we owe it to people to clean up our mess. Al said the storm sewer is way down at the end of the hill which is why we have to run the hose way down there to dispose the 350 gpm that we're pumping from the well.

George Meyer amended the motion to move that there be a test run to the end of the month and if there is not a significant decrease by that time, pumping be stopped immediately. The second to the motion by Onken stands. Greg said we would have to provide engineering flexibility to add a building later. Warren said let's say it all stops and we might be able to go to this community and say we've got X amount of water quality, X amount of space, X amount of engineering needs and the uncertainty of stopping might

do this. We could at least lay out to the community a 1, 2, 3 situation for them to consider if they would support putting a well there in the future. Jon said it could be 50 years in the future. Warren said right, but at least they could understand what the ramifications were-the water quality, scope and size of building and the operation. Greg said water quality right now is good enough to put a well there if we wanted to do that. A risk would be running into a similar situation as that at Well 29. If we put a well in there right now with an operational pump station, we already have the reservoir in place so we're talking about a pump station. If in a year or two we find iron and manganese, we'd have to add another building.

Larry said one of the arguments the neighborhood makes is that a building would be detrimental to the to the other uses of the area that they've enjoyed over the years. The building that was put out as a worse case scenario actually had the possibility of putting a filter in it. Michael asked, if we scrap this, what the back up plan is. Do we have another site? Larry said the goal was to conclude the test and then try to develop a test well site at an existing Utility property at Mineral Point and Whitney Way and get that test data back to the board so this board could make a decision between the two sites, or other alternatives, in the third quarter of 2008. We were supposed to finish up this test, close up the site, and move on to the second test well site, and then get back to the board with all of the information on costs, etc. to compare these two locations.

Dr. Schlenker said let's say this test ends and there is no significant change. We then put in a test well at Mineral Point and Whitney Way and that shows we are drawing from the deep aquifer and there is no contamination and has acceptable manganese levels. What we'd have is two water sources, both with acceptable manganese levels, except the Larkin Street well is contaminated by the upper aquifer and we're not sure what the future of that will bring, and the other one we're pretty sure will be a permanently acceptable state. Which one would we choose? Jon said he thinks that is a premature question, that water quality is only a small part of the decision making process. There are many other concerns-neighborhood involvement, impact on the neighborhood, getting electricity there, how long the pipes are that we'll have to connect to the reservoirs from there, so water quality is just one part of it. We need to come up with a Standard Operating Procedure or protocol for how we site wells that includes everything.

Larry said that is correct in that when we went into the calculus with all the other variables, if we never got that break point, this site would get a demerit. Dr. Schlenker said but it wouldn't be an automatic decision.

Jon said so we have this motion and amendment. George said the intent is that we'll go for two more weeks. If we start to see a significant decrease to show we are getting more water out and we continue for another two weeks to see if that trend continues by taking another sample, then we'd be seeing the end of the road to where pumping will be successful in a short period of time.

Lauren said we need to see that data on February 29. Are we going to have a special meeting to see that? Jon said he thought the word significant left it up to Ken Quinn. Lauren said it does but don't you want to know or just let it move to autopilot. Jon said we'll leave it to staff and our experts. Dan asked Ken what number of the fluoride tracer indicated a break point or decrease. Ken said dropping below 20 mpl is a good start. Greg said 18 is

probably right. and defines significant. Dan then asked Jon and Greg if they are comfortable saying if it doesn't get to 18 that we pull the plug. Jon said he thinks we should go to June if we need to get the data. Greg said he's with Jon, that it seems reasonable to cut it short sooner rather than later and live with the consequences of that decision.

Everyone was in favor of adding the amendment to the motion. Passed unanimously.

11. [08970](#)

2007 Flushing Report

Doug DeMaster presented the 2007 water main flushing report and recommendations. Doug stated that there are 845 miles of mains in our system. He said unidirectional flushing costs six to seven times more than regular flushing. The cost per mile for conventional flushing is about \$80 per mile, and unidirectional flushing costs about \$600 per mile. Some of the cost is due to initial program planning so we're estimating about \$500 per mile for unidirectional flushing this year. The basic recommendation is to flush 600 miles unidirectionally next year and 250 miles conventionally. He said now all parts of the city are the same. Doug recommends continuing flushing every year. Areas marked green on the map would be flushed every two years and the blue every three years. Most unidirectional flushing plans do not flush the area every year.

In summary, Doug said UDF was used in 84% of the system (710 miles). Conventional flushing was used in 11% of the system. The remaining 6% consists mostly of construction areas flushed by construction crews and dead ends that can't be flushed due to lack of hydrants. A UW study by Ryan Holzem and Dr. Greg Harrington correlated pumping rates to turbidity levels to establish optimal flushing frequencies. It measured turbidity with online turbid meter at Crestwood Elementary during flushing and at UW-Madison Water Chemistry building. Flushing turbidities and durations decrease by 7 to 76% over 2006, depending on the well area.

This type of flushing improved customer relations and reduced water use by 26% over the 2006-flushing program. Water use was reduced by 26% over the 2006 flushing program. System-wide customer complaints of discolored water were reduced by 4%, depending on the well area (average 49%).

Citywide design and mapping of the UDF program was completed. Total cost estimates (not including lab fees) included UDF office, UDF field, conventional field, ads and materials, and the UW study totals are: Pre-2006 = \$65,000; 2006 = \$428,000; 2007 = \$453,000 and 2008 estimate = \$393,000.

Michael said he is not seeing the correlation between the pumping and colored water complaints. Doug said it is a very difficult graph to evaluate, that he looked at it in a number of different ways. In one area there is no pumpage and no complaints, in another no pumpage and a lot of complaints. Many things impact complaints, which also makes it difficult to assess. Michael asked if we can do things to reduce water usage on the conservation end of it. Doug said the better we can define the frequency of flushing, the more efficient we'll become so we're not flushing where we don't need to and focusing where it is most needed. Al said we're also finding the mains are cleaning up faster so the time it takes to go from start to finish is shorter. Jon said we shut Well 10 off and brought in water low in iron and manganese to

that area. If we'd have put treatment in or used unidirectional flushing, the complaints and the turbid water goes way down. Jon asked if he can conclude if we put filters on, the unidirectional flushing will clear it out and the complaints will go away, or will we still have complaints and turbid water from water mains that are iron and not coated. Doug said we don't have a firm answer for that yet. Jon complimented Doug on the report.

Michael Schumacher made a motion to accept the report. Lauren Cnare seconded; unanimously passed.

12. [08968](#)

Prioritize Construction of Water Treatment Facilities.

Larry said we have a water quality report with respect to Unit Well 8. We are also working with a group from the east side trying to find a unit well site to replace Well 3. Quite a bit of time was spent looking at various sites. Their final consensus was that, due to the various amounts of pollution that has occurred in the east isthmus area, it was going to be difficult to find a site to replace Well 3. We developed this report, which recommends that the Madison Water Utility undertake a process with public input for the planning design and treatment facilities in four wells, which includes 29, all of which exceed EPA's secondary drinking water standards. We have good correlation between water quality complaints and these wells. The ratepayers would pay for the cost over the years at an estimate of \$8.10 per customer per year. During this effort there would be other technology we'd be reviewing. The budgetary cost is an issue; it costs us about \$3 to \$3.2 million to put a well online. This includes buying the land, putting a well in and putting in the pumping station and reservoir to serve it. The costs we have down for filtration at \$3.5 million are pretty conservative given the sites where we actually have the property. What concerned staff is that if we actually did this, we'd have to bring that site up to current codes. Larry said Jon and Dan gave him a lot of questions when this was being developed, and finally he just broke it down and answered the questions one by one. The goal is to have something for consideration by the time the Water Board would approve its Capital Improvement Budget for 2009.

Larry said an important part of this is that Council has an expectation that we'll have considerable public discussion. The recommendation we have here at the urging of Jon and Dan is that the recommendation was almost the same word for word. He said this is not a decision so much as a recommendation for the process. Greg asked what action is needed. Larry recommended referral to the next board meeting. Greg said it's important to be doing these things. The process of filtration as opposed to abandonment is good. Al said Well 30 is the last one we built. The booster station and reservoir cost about \$2.1 million. It cost \$600,000 to drill the well. Total cost is \$2.7 or \$2.8 million for Well 30. We paid about \$175,000 for the lot. With a filter you're looking at about \$2 million by the time you build it. There would be some economy by doing it all at once versus a retrofit. Michael asked how other municipalities do it. Larry said some have problems with colored water and people aren't as concerned about it for whatever reason. Middleton has filtration on two of their wells. In the report is a whole list of communities that do have filters. He said, looking beyond manganese and iron, the other issues that this water utility will have to contend with in the future are VOCs and that type of thing. We may have to have different wells having different

types of treatment. These filters would trap other pollutants also. He said Doug reported to him there are some things in the literature that indicate manganese actually attracts other pollutants as well. George said when he first heard this, he was really skeptical, but after reading the report, and this report is very well written, it answered most of his questions. He has learned that siting wells is a challenge, especially in the older parts of the city.

Lauren asked if the cost of \$8.10 to the ratepayer is permanent. Larry said it's just for these wells and he asked Robin Piper, our financial manager, to put in this schedule and come up with a rate base. Larry said to put this in perspective, we are just coming off a lead service replacement program of \$10 million. The ratepayers are also paying for, through Engineering, \$39.4 million of landfill improvements to protect the groundwater. Greg said he's on board with source control, but he's not convinced yet that filtration is the right way to go. George asked if he likes the idea of investing in our existing sites. Greg said on the east isthmus for sure.

Larry said we're also concerned about Unit Well 10 with its proximity to the Beltline Hwy and that its salt concentration keeps going up. Jon said we need to compliment Larry on getting this report ready and getting the concept of treating wells out there so we can really think about it. There is a lot to be done here. This opens the door for setting the stage to do things correctly. Michael said he has met with neighborhood people and mentioned we might look at filtration and the reception was very positive.

George Meyer made a motion to refer this item to the March agenda. Michael Schumacher seconded; unanimously passed.

13. [08949](#)

A resolution authorizing the Purchasing Agent to issue a Purchase Order/Contract to ATEC Systems Associates, Inc. for Contract No. 101512 , Procurement of Pressure Filtration Equipment for the Madison Water Utility. (17th AD).

Resolution approved with the modification of filtration capacity from 2,200 gpm (gallons per minute) to 1,100 gpm and a reduced price of \$196,750 from \$301,000.

Larry said the board wanted to put a filter in place at Unit Well 29. Al Larson and his staff and consultants prepared a proposal and the goal is to first get bids on the type of the equipment we are going to use, and from there design a building to house it. The bids came in quite good. The filters will cost \$301,000; we had three bids. We are going to design it at 22 gallons per minute. At the same time, the Utility had contracted with Montgomery and MIT to do a testing of the well at 29 in conjunction with the Sycamore Landfill. We're reviewing the bids for the filter system and test well results came in with a recommendation that the well be operated in a fashion that only averaged 1100 gallons a minute for over the entire year. This is one-half of the capacity for the well. Larry asked Nancy Zolidis from Montgomery Associates walk them through that portion.

Nancy presented a brief summary and recommendations. Individuals who helped with this project are Ken Bradbury from Wisconsin Geological and Natural History Survey who provided input and suggestions.; Joe Demorrett from the Health Department monitored the Sycamore Landfill and reviewed the data, and Janet Batista and people from the Water Utility assisted with the project.

A pumping test was conducted at 29 where it was pumped for 21 days at

an average rate of 2,050 gpm. Water levels were monitored at selected wells at Sycamore Landfill, which is 1500 feet west of 29, for one week prior, during and after pumping. Water level data collected were analyzed and compared to groundwater monitoring results. A capture zone analysis evaluated the impacts of long term continuous pumping on groundwater flow beneath the landfill. UW 29 is open only to the lower aquifer so it is cased in the Eau Claire shale. It appears there is only about five feet of Eau Claire shale at this site. Nancy said the project objectives included assessing the potential of UW2 29 to capture beneath the landfill, and providing the Water Utility with recommendations on management strategies for UW 29.

Nancy said activities performed were review of Sycamore Landfill monitoring well data, well construction reports, geology and cross-sections of the contaminant plume., selection of wells to be included in the monitoring network and install transducers and data loggers, collection of water level data for 1 week prior to pumping, 21 days during and 1 week after pumping, preparation of graphs of pre-pumping water levels, drawdown and post-pumping water levels and correct data for changes in barometric pressure. and groundwater flow modeling and capture zone analysis.

George asked Nancy if the Sycamore Landfill groundwater is above the aquitard, and Nancy replied yes. The plume of contaminated groundwater at Sycamore is at an elevation of about 810' whereas the lower aquifer is an elevation of 600', so it's quite a bit above the lower aquifer. There are no deep wells at the landfill so this part of the uncertainty.

The Water Utility operated UW 29 and monitored the pumping rates and water levels before, during and after the pumping test. Based on these data, average pumping rate was calculated to be 2,050 gpm during the test. Drawdown in the well was calculated as the difference between the static and dynamic water levels to be about 121' at the end of the test.

Nancy pointed out a diagram that showed the monitoring network at Sycamore Landfill. The model was run for various values of vertical hydraulic conductivity for the Eau Claire shale to evaluate the increased leakiness of the confining layer on the simulated drawdown. The results are shown in the table and indicate that a value of approximately 0.005 is appropriate for the value of vertical hydraulic conductivity of the Eau Claire shale. She said Well 23A is the closest well to UW 29, approximately 1100 feet from the well. All of these wells are in the shallow upper aquifer above the Eau Claire shale.

Conclusions, based on results of the study, are:

1. Results of November 2007 groundwater level monitoring at Sycamore Landfill well favorably agree with the less intensive groundwater level monitoring conducted during the manganese treatment pilot study in January and February 2007.
2. The Eau Claire shale-confining layer identified at UW 29 is likely present throughout the vicinity of the well and limits flow between the upper and lower bedrock aquifers. Declines in groundwater levels at the Sycamore Landfill monitoring wells would likely be much greater than those observed if the Eau Claire shale were absent.
3. Continuous pumping at UW 29 may have the following effects on groundwater from the vicinity of the landfill: A. At 1100 gpm - would probably not capture groundwater from the vicinity of the Sycamore Landfill; B. At 1700 gpm - may capture groundwater within a period of 20 years; and C. At 2300 gpm - may capture groundwater within a period of 15 years.

Preliminary Recommendations: Based on the conclusions of the study, Montgomery Associates recommends the following:

1. If impacts from the landfill are to be avoided, the long-term 30 year operational strategy for UW 29 should consider pumping at an average yearly rate of 1,100 gpm. Since this is an average rate, the well could be pumped at a higher rate periodically or for specific intervals during the year.
2. The operational strategy should consider all of the area municipal wells and other high capacity wells that may influence the groundwater flow system beneath the landfill. Pumping scenarios should be evaluated to reduce potential of impacting water supply in the future.
3. The Water Utility should work with City Engineering to develop a monitoring and analysis program for Sycamore Landfill.
4. Provide additional monitoring point between landfill and UW 29, a Sentry Well should be installed in the lower aquifer to monitor groundwater between UW 29 and Sycamore Landfill in a possible migration pathway from the landfill to the unit well.

George asked what the fiscal impact would be by reducing capacity by 50%. Larry said the first fiscal impact is what it means for the future and other wells that we have. They looked at a number of variables and whether it would work. Their belief going into it was that we can successfully operate the well at the 1100 gpm average over the year. What if we just operated at 1100 gallons all of the time. They went through numerous looks at various alternatives, looking at the peak value of 68 million gallons per day for 2025 and then taking off two wells, assuming that they were down for maintenance. We got a level of comfort that we could keep the Felland Road reservoir in service and operational during the peak summer days operating at 1100 gpm. If we really had an emergency, we could bump that well up. The model was quite helpful with this and the entire fire suppression equipment. Larry said he thinks that is the consensus, that we can operate with this at 1100 gpm.

Al said there are three wells in the master plan that we need to site and construct to make this work. Those are included in your analysis. There's a well planned for Femrite Drive and we hope to drill it this year. Well 45 was discussed, replacement for Well 3, that the group is working to site. We own property at Hoepfker Road designated as Well 35. Al said we still have to add wells, even with the filter at 29, in order to make it work with the population today.

Larry said the master plan asks for the projected population of 2025. The reason for the wells is we're assuming during the worst-case scenario we're losing wells if they're down for mechanical failure or repair. Michael asked what the average pumping is with other wells. Al said in 2007, Well 11 behind Woodmans, 1100 gallons per minute is equal to 550 million gallons a year. The well behind Woodmans produced 850 million gallons per year. Fifteen, on E. Washington, not far from East Towne, produced 828 million gallons. Eight, a seasonal well, produced 296 million gallons. Seven, on Sherman Avenue, produced 509 million gallons, so essentially what we're talking about, 550 million from Well 29 would be pretty much the same as what seven was in 2007.

Larry said we invited Ken Quinn, Ken Bradbury from the WI Geological & Natural History Survey, Joe Demorett, hydro geologist with the City, and Janet Batisto, retired hydro geologist. They agreed with the consultant's recommendations and they also determined that the analysis was really

conservative. By putting in those wells, we should be able to measure what happens in the future and see if, at some time, we can move this thing up. Our ability to measure and our technology is going to increase as we go forward. We start off in a conservative fashion and see how it develops. The purpose of this well is to serve the new service area and that big reservoir. The other issue that he would like to bring to the Board's attention is that when he talked to the hydro geologist is that the City of Madison Water Utility has a pretty simple doctrine with regards to pumping-it's either on or it's off, and when it's on, it's maximum and when it's off, it's zero. There is some pretty good rationale for operating our wells longer at lower pumping rates, one is for energy and the second is we don't have issues like the Sycamore Landfill or the Mineral Point Landfill for Well 16. If we would actually change that doctrine of pumping where we would treat these wells a little easier, it may prove advantageous from the standpoint of the quality of the water as well as our power costs.

George asked if there is some intervention that can be done in relationship to the Sycamore plume, which would prevent it from causing problems. Jon asked if it would be the same, running 1100 gallons full time, as running it 2200 gallons for six months out of the year. Nancy said yes. Jon said, with four hydro geologists in the room, one being Ken Bradbury who is independent, and the other is from our science advisory group, Janet Batista, and Ken Quinn and Joe Demmorett, they all agreed that your recommendation of 1100 with the provision we put in a monitoring well, is a prudent way to move ahead. Nancy said both she and Ken worked on it, and he was expressing her opinions.

George said we have to do a substantial reduction in pumpage this fall. Could this issue of the Sycamore Landfill been rejected in advance. Jon said from his Board perspective, they had consultants tell them that the Sycamore Landfill would not bother us, so this is new data. Nancy said last year when we ran the model, we took advantage of the pilot testing that was done at Well 29 to monitor two wells at Sycamore Landfill to see if there was a response, and there was. We ran the model to look at basic conditions over a long period of time. What we saw was reasonable. We saw a drop of 3 to 4 feet over a long period of time versus in the range of one foot during that pumping scenario. We didn't have control over the pumping rate and no control over the time period. What we came back with was let's define our pumping test information so we can actually run a transient model over 21 days, which was what the pumping test was for. So we could work at a higher level of information.

Michael asked if we are moving in the right direction, if we're getting better at our modeling and data collection, so each time you know the impact of the quality of water in the well you are looking at. Nancy said that is true, the more information we have the better input we can give to the model. It's because we have Well 29 there and can pump and monitor it, it gives us enough data to look at.

We have more information now but the model still has some uncertainty. We really don't know how thick the Eau Claire shale is; as far as she knows, that has not been looked at. Modeling is a tool in looking at potential impact.

Jon said we're talking about a purchase agreement for ATEC Systems for procurement of pressure filtration equipment for the Utility. Their bid for \$301,000 is to treat at 2200 gallons per minute, so that is why we are

discussing this. It looks like we are going to settle for 1100 or something more than that.

Larry said he recommends on page one, 1100 gallons per minute. Put in a space for 2200 gallons per minute. He asked the total cost based on the estimates, and Al went through and updated the estimates to the lowest price for the filter. It came in considerably less than the estimate. We discussed this with the filter provider. The question is, do we buy 1100 gallons per minute filters, or do we buy 1650 gallons per minute filters, or do we buy 2200. Larry said their recommendation is that we buy 1100 and you can add to that. Our second recommendation is that we design the building to house the filters and a tank for the backwash at 2200 gallons per minute in anticipation that we are going to get there. This would indicate that our cost would drop from \$1,784,000 to \$1,429,000-that is an estimate. If we went with the smaller facility, 1100 gallons forever, we would drop it down to \$1.252 million. The recommendation is that we proceed with a design for 2200 and the full backwash and then add the filters as we need them. The other thing is, if we have a real issue with needing more water, we can bump up those variable speed pumps. We can bump this up to 1650 and we'll have to backwash more. Larry said the recommendation on the front page is we go with the 1100-gallon per minute but will put in the space for 2200 and then we'll have the backwash, and we'll still have to go through building design and approvals, etc.

Al said the budget line is \$2.4 million. Jon said what we're deciding on tonight and he thinks he's hearing that we could change and substitute \$196,000 and approve that tonight instead of the \$301,000, and do the 1100. Michael Schumacher made a motion that we substitute the \$301,000 with \$196,750 to purchase filtration for 1100 gallons per minute. Jon said we're deciding if we are going to buy \$301,000 or \$196,000 worth of filtration equipment. Warren Onken seconded; unanimously passed.

Larry thanked Al and Doug DeMaster for all of the information they pulled together in a short period of time.

A motion was made by Schumacher, seconded by Onken, to RECOMMEND TO COUNCIL TO ADOPT - REPORT OF OFFICER. The motion passed by voice vote/other.

14. [08784](#)

Transferring a Water Utility parcel of land to City Engineering.

Larry said this is a small parcel of land that no one wanted at the intersection of Sherman Avenue and Northport Drive, so we're transferring the parcel to City Engineering. Michael said that is a bad intersection so having the extra land will be good to improve the intersection. George Meyer made a motion to approve the resolution. Warren Onken seconded; unanimously passed.

A motion was made by Meyer, seconded by Onken, to Return to Lead with the Recommendation for Approval to the BOARD OF ESTIMATES. The motion passed by voice vote/other.

OLD BUSINESS

15. Status of Well Siting Public Participation Process

Larry said this will be discussed at the meeting tonight after this board meeting. He said we have a draft SOP for site selection for new WU facilities. Lauren asked if he expects this to be complete by a certain date as there are two important positions coming on, General Manager and the Public Information Officer. Larry said the Gruber resolution requires that we get back to the Common Council on March 18. He thinks the Council will be satisfied with this if we have a process in place. The SOP envisions that in some cases, the SOP would be approved by the General Manager and in some cases, it will be approved by the Board and the General Manager, and some by the Council. In this particular one, Larry thinks it will be approved by all three. Larry said the Public Service Commission code says we have to do this anyway, be approved and they require public participation.

George said this SOP will be approved by the Council, we will fine tune it, so will it need to go back to the Council every time for approval. Larry said he doesn't think so, that it's just the first time. Jon said what Larry wrote here and given the PSC standards, this might be what the final looks like, but we need to really listen to the neighbors. This could change significantly before it's finalized, and this is a start. Greg said it might help to have some kind of statement on impacts in the document. There is a five-year master plan that includes some of the facilities affected by this and it could delay the five-year plan.

CORRESPONDENCE AND SPECIAL INTEREST ITEMS**16. Discussion of Madison Metro Sewerage District 's planning survey**

Larry said he wanted to share this as it is interesting. Lauren said she found it interesting that they had a 50-year master plan and were willing to share it with the public. The little informational piece that came with it was an outstanding public relations tool. She said her 11-year old read it and thought it was interesting. It touched a lot on conservation, and we might want to consider when we do our customer satisfaction survey-that public relations and educational aspect of it. Greg said he was considering writing on the questionnaire he received that he would participate beyond the questionnaire. He wondered if the board would think someone should be actively involved. Larry said he is on their board. Jon said we have one person on our board on the Commission on the Environment for this next year. Greg said he doesn't feel as obligated since we have members of the management staff involved.

17. [08972](#) Letter of Appreciation for WU Employee

Autumn Bradley-O'Rell was commended for being of assistance to a customer with a medical issue.

ADJOURNMENT

At 7:40 p.m. George Meyer made a motion to adjourn the meeting. Lauren Cnare seconded; unanimously passed.

FUTURE AGENDA ITEMS

Following Adjournment of the Board meeting:

**Meeting with representatives of the Larkin Street, Sunset Hills
Neighborhood in the Reservoir Park area (Reservoir #106) to discuss well
planning process.**

(A quorum of the Water Utility Board may be present.)