



MINUTES –

Hull WATER STUDY Task Force
Thursday, July 14, 2011 at 6:30 p.m.

TOWN OF HULL MUNICIPAL BUILDING
4550 WOJCIK MEMORIAL DRIVE, STEVENS POINT, WI 54482



- 1) **CALL TO ORDER:** The meeting of the **Hull Water Study Task Force** was called to order on Thursday, July 14, 2011 at 6:30 p.m. by Water Study Task Force Co-Chair Mel Bembenek at Hull Municipal Building, 4550 Wojcik Memorial Drive, Stevens Point, WI 54482.

Present: Co-Chair: Mel Bembenek.

Committee Members: Tim Zimmerman, Bill Devita, David Schmidt, Russ Prusak, Robert Perkins, Gwynne Bablitch, Phil Gjevre, Gladys Laug, Advisor- Paul McGinley of UWSP College of Natural Resources, Advisor- Ray Schmidt Water Quality Specialist for Portage County, Water Study Secretary: Patty Amman.

Others Present: Patrick Planton, Engineer from S.E.H. Appleton, and Town of Hull Supervisor Dave Wilz

Excused: Co-Chair: John Holdridge, Committee Members: Mike Olson, Terry Smith, Harry Obremski

2) **INTRODUCTION OF TASK FORCE MEMBERS.**

Mel Bembenek Our Co-Chair John Holdridge may not be here tonight. He contacted me this afternoon and something came up and he said possibly he might be in later but he didn't know for sure. Now if we could have the introduction of task for members. We'll start around the table; introduce yourself and why you are on the task force.

Gladys Laug I live in the Kirshling subdivision. I saw the notice in the paper and thought it would be interesting. I brought a friend, Amy, who goes to school at the University and works with the test water samples there. I invited her along as she is working on her bachelor's degree and this might be interesting to put on her resume.

Ray Schmidt I'm the water quality specialist for Portage County and I just love working with the Town of Hull and John Holdridge asked me to participate.

Gwynne Bablitch I live on Casimir Road west of the interstate. I'm here because John Holdridge asked me.

Robert Perkins I live in the Plover Heights subdivision.

Russ Prusak I have concerns for water and live over here off of Agnes and Sunny Crest where I've been for 35 years. I have concerns about what will happen with our water after the City gets in here.

Bill Devita I'm manager of the water environmental analysis lab in Stevens Point and do water testing for the City. I'm also a Town of Hull resident and have been for about 22 years. I have concerns about water quality in the township.

Dave Wilz I live in the Kirshling subdivision and have lived in Hull since 1984. Also I'm a supervisor for the Town of Hull. Normally I'd be sitting in the audience but since John Holdridge is missing, I decided to jump in here and help out. We also just recently started a Public Safety Task Force in our Town so I'm familiar with how it runs so I'm giving Mel a hand if he needs it.

Mel Bembenek I live on Brilowski Road and have been in the Town of Hull since the late 1960's. I'm also a supervisor here and have been since 1985.

Patty Amman I'm the recording secretary for this particular meeting. I live off Airport Road which isn't too far from here. I'm the one that communicates with you through e-mails. So if you have questions later, I might be the person or John Holdridge, that you could communicate with or be in correspondence with via e-mail.

Patrick Planton I'm a water engineer with the consulting firm of Short Elliott Hendrickson Inc. of Appleton. I live in the Village of Plover. I'm here representing the City as I'm the project manager for the #11 Well Project and treatment plant that is being built right now not too far from here. I met with a different water study group here about a year ago. We also met with the Town of Hull back in 2010 to talk about the project and share information. I have a presentation a little later in the agenda to share with everybody about the project and some information we have collected over the last year. I can give you some information on the project itself and I'm here at the pleasure of the mayor and utility director. They said I could go ahead and meet with you folks, so that's not a problem. John Holdridge asked me as well.

Tim Zimmerman I've been on the Portage County Citizen's Groundwater Committee for quite a few years.

Dave Schmidt I live over in the Plover Heights subdivision also. John twisted my arm a bit but I am interested in the water quality in the Town of Hull.

Phil Gjevre I live in the Kirshling subdivision. Dave Wilz approached me about serving on a committee such as this and after that, I was contacted by Mr. Holdridge. This sounded like an interesting and worthwhile task force and I agreed to serve.

Paul McGinley I work for the University of Wisconsin Steven Point, water quality educator and also am part of the Citizens Groundwater Committee in Portage County.

3) TASK FORCE PROCEDURES – Parliamentary Procedures, Open Minds, Open Discussion, Respectful of Opinions, Task Force Participation.

Dave Wilz We're going to follow parliamentary type procedures but we're also going to be pretty loose. We like a lot of dialog and discussion. This is not going to be a standing committee. This is going to be a task force. The concept of a task force is to get people together 4-6 times, see what is on their minds, put the issues on the table, set some direction on what you'd like to see and get some recommendations we can take to the Town Board that they can act on and hopefully implement. That's the whole idea. We like open minds and open discussion and respectfulness of others. We want everyone to participate at the level you want to participate at. Tonight we have Ray Schmidt and some other resource people here to give you some basic information. Maybe that will help project in your mind what direction you want the task force to take.

4) ABOUT HULL – Budget, Staffing, Functions, Values, Themes.

Bembenek About Hull staffing...that's the handout from the April newsletter. When John comes, he may want to say something about it. Any questions on that?

Wilz It's a page off the April newsletter and about how big we are, or are not, what's important to our residents, etc.

5) MISSION STATEMENT – Quality & Quantity of Hull Ground Water.

Bembenek Mission statement. *(Mel read through the mission statement that was handed out for everyone.)* Any questions?

Zimmerman On the quality and quantity, the City built a well out there along Hwy. 66. Are they planning on putting any fire hydrants along the way or just putting that straight back towards Stevens Point? In other words, if there is a fire hydrant somewhere along there; is that going to help fire insurance prospects for people that are still in the Town of Hull even though that doesn't affect quality or quantity?

Bembenek I wouldn't know about that, but I might be able to ask.

Planton I can answer some of that Mel. Our original intention was to put hydrants, at least one along the way. It's about 4,000 feet of 24" water main along Hwy. 66 from Torun Road out to the well access road. The City thought long and hard and said that I should approach John Holdridge and say that if the Town of Hull would like hydrants along that transmission main, then we'd add them to the project but then the cost of adding those hydrants would have to borne

by the Town. When I mentioned that to John, he thought about that and the ultimate decision by the Town was that there were adequate hydrants along Torun Road where your volunteer fire dept. can access water rather than having hydrants along Hwy. 66. So we didn't. But we did add one additional hydrant just to help the contractor to pressure test and bacteriologically test the water main. So there is one right about at the high pressure gas main crossing. You'll see a hydrant there. So that one was added after the project was bid and that was something the City decided to pay for. It was easier for the contractor in building the 24" transmission main. So other than that one and the one at the corner of the access road to the new well, that's it as far as hydrants along that stretch of Hwy. 66.

Zimmerman So about 2 miles.

Planton About 4,000 feet.

Wilz Tim, maybe I can give you some other information here that might help answer that question for you. It's not related to the water. The Town of Hull is exploring joining the Metro Fire District. What that is, Plover and Whiting got together, even though they are separate communities, separate staff and separate budgets, and decided how can they collectively work the 2 fire departments so they don't all need to have the same fire equipment, recruit the same amount of people, and they developed something called the Metro Fire District. The idea is to have better service for less cost by combining resources. The City of Stevens Point joined the Metro Fire District about 6 months ago. We put a letter in saying that once Stevens Point has been integrated, we (*the Town of Hull*) would like to be looked at next. What that means for us as residents is we would have all of our surrounding communities serving us in a fire district and that should help lower our insurance rates because we're no longer just dealing with Hull where we have to tank water. For instance, where I live, Stevens Point has a fire station within a half mile yet I have to put on my insurance that our fire department is 8 miles away. I won't have to do that. Once we get through this process, which will take about a year, we can report to citizens how they could possibly take advantage of it to lower their insurance rates. We do buy water from the City all the time (*in the use of City hydrants when needed.*)

Zimmerman I understand that. My choice was quality and quantity and to study the insurance rates by having more water here.

6) GROUND WATER BASICS – Water flow, etc.

Ray Schmidt I'd like to pass around this map that I, John Holdridge and Paul McGinley put together back in May when we were first looking at doing this. This will leave you with some ideas as you think about what I'm presenting. I titled this: groundwater *basics* (*PowerPoint presentation*). I told John that I thought everyone should start at the same point. You need to know a little about groundwater. These are some factors that influence groundwater quality and groundwater in general. Surface water: people don't realize surface water influences groundwater. There really isn't a disconnect between the two. They flow back and forth. Groundwater recharges streams. Wetlands recharge groundwater. Geology is another one, especially in the Town of Hull; we have some geology that influences groundwater. Groundwater flow is a real important concept that is not that old. It's really only been

recognized for about 20 years. I like to think of groundwater like kids, they never hold still, groundwater is always moving. It's always moving somewhere. Actually it's more like old people, because it moves really slow. Recharge locations: those are so important because the groundwater does flow and where your water comes from for your drinking water well is dependent upon where it is put into the ground and what the land uses are. Then I put on here high capacity versus residential wells. I won't talk about that because Pat Planton will probably cover that. This is what the Town of Hull currently looks like.

Perkins A question about the groundwater flow, do those patterns change over time or do they stay the same?

R.Schmidt They change over the seasons and on a multi-year basis depending upon how much water you get in certain places. But I suspect they don't change a lot. The general direction of flow in any given spot is pretty constant. This slide shows the surface water. This includes the streams like Hay Meadow Creek and the Little Plover River and also wetlands. A lot of people don't think of wetlands as surface water but from a groundwater standpoint, they do a lot of storage of water and groundwater is intimately connected with wetlands. The next slide shows geology. Every one of those crosses is where there is a well that is drilled into bedrock. A lot of people don't realize how close the bedrock is to the surface in the Town of Hull because it's covered with a layer of sand. Bedrock is really important; it limits the ability of the water to move downward. Once the groundwater recharges, it has to move laterally. The bedrock is pretty much impervious. There is some groundwater in the cracks in the bedrock but not a lot. These are the areas where the bedrock wells are.

Wilz Where is the Wisconsin River?

R.Schmidt It's over here on the other side of I-39. Here's I-39 and the new Hwy. 10, this is Hwy. 66. This just shows the surface water and streams and how they interact with the bedrock. They don't vary very much because the bedrock tells the surface water where to go. Here you can see how Hay Meadow Creek curves around this bedrock high over here and how the Wisconsin River comes straight down for a long ways from Lake DuBay and all of a sudden runs into this bedrock area over here and cuts around to the west and goes back to where it (*the river*) wants to flow. The Jordan Pond area has very shallow rock and you can see where the rock surface is as the Plover River tumbles over the dam area over here. I mentioned groundwater flow and this slide shows groundwater contours. The groundwater flow is perpendicular to these lines. These are up here along North Reserve Drive and the ground level water there is 1,130' so it flows towards 1,120' and 1,110'. Here is the Casimir Interchange and if you look up here, Gwynne's house is in here. This is a groundwater high with it sitting mostly on top of bedrock and moving laterally. The distance between these contours is an indicator of how fast the groundwater will tend to flow because it goes downhill. It depends upon the gradient. Up here we have a long ways between contours and understandably, the groundwater is very slow moving. Here, it might seem not rational, but the groundwater is actually moving to the northeast. Somewhere in here it splits and moves over to the Plover River, and over here, it's moving towards the Hay Meadow Creek. Just so you know, the groundwater moves perpendicular to these contours. On here, it's moving down here from the north. Here's the slide with the surface water indicated on it. It shows the interaction. The surface water also, being that it's connected directly to the

groundwater, those lines aren't something there on the ground, it's drawn as a conception of what's there. Wherever the surface water comes out, that's where the ground water is at the surface at that spot. The rivers, for instance, are just leaks in the groundwater. It's where the groundwater meets the surface and leaks out, springs are the same thing.

Amman Ray, do you have any of these maps online anyplace where people can go and look at some of them?

R.Schmidt I don't because I just put these together this afternoon. But I could certainly print them up if you would like them.

Amman We might get inquiries about them.

R.Schmidt This one shows where the high capacity wells are, these green ones. There aren't too many of them. They are mostly for agriculture use. The City's wells are shown here. You know where they are and you can see the pattern. Here are a lot of the household wells. Remember on that little introduction, I said I would talk about land use. Land use is very important for groundwater quantity. Wherever you have a lot of wells close to septic systems, you're treating the sewage for bacteria and some other things but it doesn't treat for nitrogen. Anyone who eats any amount of protein puts out nitrate nitrogen out into the sewage. So the more protein you eat, the more nitrogen you're putting into the groundwater. On average, it takes a lot 2 acres in size to dilute the amount of nitrogen going into the water from a family of 4. So if you have smaller lot sizes, dilution is not the solution to pollution. That's one of the things we'll take about later too. I just wanted to put some things together here as an introduction.

Prusak What is the difference between the yellow and the green dots?

R.Schmidt. There isn't any. They are all wells. Actually the blue or green dots are the ones where we have good well construction information. We know how deep the water was when the contractor drilled the well or put it in. We know how deep it is to bedrock in that location. The yellow ones (*dots*) are the ones (*wells*) we don't have information on.

Prusak When did well drillers have to start reporting their information?

R.Schmidt The oldest one we have in the Town of Hull is 1928. We have a well construction report with the oldest one of 1913. They were always required to file those. We have better than 95% in the County GIS historically that were filed at Portage County. I mentioned the subdivisions and land use; you can pick out the areas here where we have the high nitrate wells. The other guys will probably talk about that too. Here's Meadow Manor subdivision with sandy soil, shallow wells. Here's a cluster of subdivisions up here on Hwy. 66 and Torun Road. Down here is Eastwood Subdivision, Jurgella and further down here Treder. That's almost completely saturated as far as high nitrogen wells. This area shown is out in the Casimir Drive west area. Here's the County X interchange and Granite Ridge Road. None of these wells have high nitrates. Well, I shouldn't say that. I should say, the ones that were tested didn't have high nitrates. That's the only way we know, when folks test their wells and we utilize the data.

Amman So Ray, is part of that ... where you have a higher concentration of people closer together, you're going to have higher nitrates? Is that the way it works?

R.Schmidt If you put your nitrogen in and all the rest of us do too, in a small area, there's not enough fresh precipitation to dilute it. Plus, with groundwater flow in those subdivisions for instance along Hwy. 66, you've got the groundwater going this way. As it goes through all these subdivided areas, it's picking up nitrogen and that affects folks further down gradient here who are getting more than their share.

Perkins So you say 2 acres for a family of 4, or ½ acre per person.

R.Schmidt On an average. Vegetarians probably have lower affects on nitrogen in the groundwater than folks like me and Russ who eat pretty well.

Bablitch What about agriculture use? Doesn't that add to it also?

R.Schmidt Yes, that would. The town of Hull doesn't have much anymore in the way of farming. This just shows the area where Plover Heights subdivision is with the new Well #11 down here. I'm not going to address more on nitrates, we can get more into that on a later meeting. This is the area to the south with Fleet Farm down here, Old Hwy. 18 and the interchange. It shows you again, some of the high nitrates present down there. What I wanted to show you with this slide is the groundwater flow directions flowing from east to west towards the river. You're actually getting your recharge water from the Town of Stockton out here (*in the SE portion of the Town of Hull*). Out here in the Town of Stockton, there are a lots of agricultural fields, high capacity wells. Not that those folks aren't doing their level best to minimize their fertilizer use and whatever ag. chemicals they need, but they're putting them on to get their crops and they'll use the water they need for their crops. That's why I put that slide up here, because it gives you the flow paths. This is just a reminder of what we have to deal with as for our quantity, factors that influence the groundwater. So I left you with this thing here (*the map he handed out*) because we had talked about, preliminarily, groundwater districts. I said to John that these areas might be something to consider because there's data concentrated in those areas. You might have enough data to get some decent statistics off of them. You can see what it looks like there (*on the 4 areas marked on the map he handed out*). That's all I'm going to give you tonight but I will be at all of these meetings and I'm happy to answer questions. My name is on the bottom of the member list that was handed out and you're welcome to call me or e-mail me. I like e-mail.

Bembenek Ray, are you going to do the water quality data for Hull?

R.Schmidt I think Paul McGinley is going to do that. Russ Prusak asked if I had a slide that showed depth to bedrock. I haven't made one yet but that would certainly be easy to do. The soil survey doesn't give us good enough depth. What we use is all the well construction reports and the surface outcrops, where the bedrock comes to the surface.

Bembenek Are you going to make some copies also?

R.Schmidt If you would like them. I just threw this together in a half hour today just to give you some background but if you'd like copies, no problem, in fact I'll make them look nicer.

Planton That's a very good summary Ray. It's all good information for anyone who lives with a private water supply.

7) STATUS REPORT ON STEVENS POINT HIGH CAPACITY MUNICIPAL WELL #11 – Mr. Patrick Planton, P.E. – Short, Elliott, Hendrickson, Inc.

Planton What John told me was I could have 15 minutes or 30 minutes maximum. I put together an agenda and there's more there than 30 minutes, but I don't want to put anyone to sleep first time around here. But, what I've got is a brief history of Wisconsin Water laws. It would be a good basic primer for anyone who wants to know about some of the legal issues that have occurred in Wisconsin over the past 100 years. Some of the Supreme Court cases that really have driven the law of the land right now in Wisconsin as far as drinking water and wells and the impact on properties. That's probably a 15 minute presentation that I have condensed from a 45 minute presentation. What I'm willing to offer you is that I can come back at any time, if you want me to come back, and I can give you that 15 minute primer. Russ Prusak and Robert Perkins were here back in January of 2010 so you know the history of Well #11 for Stevens Point. That's about a 15 minute presentation too. I leave it up to the group. I can go through some of the history and background as to why the City has built the well where it is, or I can jump right into this last 15 minutes of water flow information in the area, some water level information in the area, where our project is at and I'll start with a summary slide just to let you know briefly why the well for the City is located where it is. But what you won't have is a lot of the backup on that. I'll leave that up to the group. Do you want me to talk for 15 minutes or want me to talk for 20 or 30?

Amman I just want to let everyone know that if you go to our Town of Hull website, the initial meeting we had where Pat did his presentation about a year and a half ago, the minutes for that is on our website. You can get a lot of information by going through and reading the minutes. We also have his slide/PowerPoint presentation as an attachment to that so you can look at that as well.

Bembenek Or would you rather see it today? Do you have time for Mr. Planton and a half hour?

The general consensus was that the group wanted to see it today.

Planton Okay, I'll skip the Wisconsin Water Law but they might have seen some things in the media about a very recent Lake Beulah Management District vs. the Village of East Troy. The filing of the Supreme Court case was a week ago yesterday so it's as hot off the press as you can get. That's one of the reasons I thought I'd update the presentation on the Wisconsin Water Law that I gave to the Water Association about 6 years ago. The Supreme Court ruled against the Lake Beulah Management District and ruled in favor of the Village of East Troy that put a high capacity well in the lake management basin. The Supreme Court also ruled in favor of the DNR as being the responsible state agency for approving high capacity wells in the state. That will relate a little to what I'm going to be talking about here shortly.

Here is a map of the City of Stevens Point. The blue line is the Plover River, the red lines are the major highways. Here is the Well #11 site (*star*), Here is where we're sitting today at the Hull Town Hall. Ray's map before, shows where the City has its wells. I'll go into a little bit of history there. They are fairly close to the Plover River and there is a reason for that. The City of Stevens Point water supply, prior to 1923, was actually surface water. It was pumped right out of the river with minimal treatment. There was an old water stand pipe over in Bukolt Park that maintained the pressure in the City for that. Because they were able to find some really decent quality ground water along Iverson Park, those 3 wells right here and the building still exists...if you drive into Iverson Park, Wells 1, 2 and 3, the buildings still exist, you can see the old stone buildings. Those were abandoned back in the late 1970's because the water quality was starting to degrade with higher levels of iron. The City had already constructed quite a few other wells in the interim. The City went just north of Iverson Park, that's Well #4 that you can see through the woods. That well has higher levels of iron. The water treatment plant was designed and constructed back in 1999. I was the engineer for that plant. Well #5 is behind the Hilltop. You'll notice that is the only well, indicated by the dots, that's actually on the east side of the Plover River. Like Ray Schmidt had said, very high nitrates in that area on the east side of the river. We did a study for Stevens Point looking for where they should site their next high capacity well. We looked in that part of the Town of Stockton and there wasn't any high capacity wells or shallow wells there that had nitrates less than 10 ppm; that is the standard for primary drinking water. We steered clear of that area to the east. That purple shaded line is an ancient buried bedrock channel that was carved over eons of geological time. Ray had mentioned Fleet Farm, which is located right there on the map. It's on a bedrock high and the reason I remember that is because right after that building was built, their shallow well that went into the granite, had high levels of uranium which is also a primary drinking water contaminate. So they had a water cooler the employees and customers could drink from because you couldn't drink the water from the well with the high uranium. If you go a little further away over here, there's a well at the Stevens Point Country Club that's at 190'. Here, bedrock is maybe 10'-20', whereas here it's almost 200'. So you can see there is a tremendous amount of potential ground water resources along the Plover River but it curves away from the river and goes north as the Plover River goes to Jordan Pond. That's the reason why the City located it's wells along the Plover River back in the 1960's. Primarily their water comes from Wells #10, 9, 6, 7 and 8.

Prusak How far north does that channel run?

Planton Beyond the northern boundaries of Hull, I don't know. We've never analyzed anything further north than Jordan Pond for water supply purposes for the City. When you asked about a depth-to-bedrock map, that is essentially how we created that, by looking at well logs and seeing how deep they were and where the bedrock was and where the water table was and where the groundwater elevation was.

Prusak How deep is the bedrock through there, any idea?

Planton As you get away from the river, we're right on the boundary here and these wells are probably 70', 80' to 90' deep. That would be to bedrock. On a subsequent slide, Well #10 is right over about here, relatively close to the river (*Plover*). If you go west of that line towards the airport, the bedrock is relatively high. I remember them saying they had to blast rock out of

North Point Drive when SPASH was built to put water and sewer in. You get over to the eastern part of the City and bedrock is down 200'. Plentiful drinking water supplies in areas where your saturated thickness is relatively thick. So that's why the City wells were located where they were. Now we're located up over here at the Town Hall and Well #11 is right there. There's a reason why it's located where it is. This location as a future well was identified back in a master plan study I did for the City back in 1991, 20 years ago. That it would be a future well field for the long-term future water supply for the City. But right now, about 90% of their water comes from those airport wells right here, #9, 6, 7 and 8 and #10. Well #10 was recommended out of that study in 1991, it was built in 1993 and went into service in 1994. It's a little bit unique. It's a horizontal collector well. It's different from your standard (*vertical*) well that has a pipe with a casing with a screen at the bottom that you put a pump inside of and pump water out of. Stevens Point's wells #4 through #9 are conventional vertical wells. They have a 20-24" diameter pipe going down maybe 50'-60' and then there's a 20' or 30' piece of screen that keeps the soil formation, sand and gravel away from the well. You stick a pump in there and pump water out of the well. A horizontal collector well is significantly different. Typically you'll get tremendous levels of water with lower levels of drawdown of the groundwater compared to your conventional vertical high capacity well. Well #10 will yield about 5 million gallons a day, 700 gallons per minute for every million gallons per day. This gives you some perspective on how much water these wells produce without a lot of drawdown to the groundwater levels. They're close to the Plover River, very efficient, low drawdowns and the water quality is very good. That well does not need any treatment right now. The City has been very proactive in doing updates to their master plan for projects. Here's 4 different studies done by 4 different companies but all done by the same person: myself. Any improvements, recommendations, anything that the City of Stevens Point Water Utility has done, I've got my fingerprint in a lot of those recommendations but they are very proactive. Running a water utility the size of Stevens Point is very capital intensive. Very expensive to run and operate these facilities and water towers, paint them, pump the water, test the water to make sure it meets all the safe drinking water quality standards. The major recommendation from that study was Well #10. This is a graphic from that study and you can see here I-39, US 51 bypass, here's Well #4 and #5, here's the airport well field. Even back 20 years ago, we had identified a proposed future well field so that's been in the planning stages for 2 decades. This shows some of the recommended improvements. A treatment plant wasn't added for the airport wells. Well #10 was added here and we looked up here and said, depending upon the water quality, you could probably get 3 conventional vertical wells from that well field near the river. They might need a treatment plant or might not. To get that water back into the transmission main, that would run over here and run down along Hwy. 66. That was the conceptual plan from 1991. If you look at the City future land use map, this is 2006 but this map has always had this shaded area up here which says "proposed future north well field". So that has always been in the City's long-term plan to get the additional water supply, it was necessary to look at that City-owned property. So it's been in the planning stages for a number of years. Well #10 was added in 1993. The 1996 plan, we recommended rather than construct any wells in the north well field, Well #4 had high levels of iron so rather than spend \$2 million developing a water supply in the north well field, you can always do that or leave that for far into the future and construct a treatment plant to take the iron out. That's what they did in 1999. This capital improvement table from the 1996 study does say, ultimate long-term improvements; develop the north well field and Well #11. So that was still in the long-term planning for the City at that time. Five years later, the new Well #11

project was brought up in short-term improvements because the water supply capacity demands were getting to a point where the City was looking at additional water supply needs. That was 10 years ago. Here's the improvement recommendations from 2001 when we recommended a conventional vertical Well #11 and 2 more wells in that 10 year period. Of course, they didn't actually construct those wells. They've done some other improvements, but they're getting to a point where the City needs the water as soon as they can get it.

Perkins At that point, were they looking at conventional (*vertical*) wells?

Planton Correct, 3 conventional wells (*vertical*) to the tune of \$2.4 million each (10 years ago). So the last one, the master plan we did was back 4 years ago. We went through some projections of water demand. The blue shaded areas are the maximum highest daily usage for the City in a given year. You can see how it fluctuates from year to year. The red line shows how much water supply the City could pump over an 18 hour day, continuously with the largest unit out of service. The black line is all the wells pumping continuously 18 hours a day, every day. You can see there were years when they couldn't even meet their demand with their wells running 18 out of 24 hours. DNR has a guideline and we water engineers also recommend that any water utility have at least enough reliable supply capacity to meet current or future maximum daily demand projections. So Stevens Point's maximum daily demand in 2006 was between 13 and 14 million gallons per day. If you don't remember any other numbers I give you, remember 13 million gallons per day (13 mgd). We recommended added Well #11 right away and adding #12 probably within 6 to 8 years after that, conventional vertical wells. The DNR, on the other hand, said you need to have the water supply now. If you look at similar situations that Stevens Point has with their current wells, Well #5 behind the Hilltop is getting very close to a nitrate violation (*high nitrates*). If they go over 10 parts per million (ppm), the DNR will make them turn that well off and the City will lose 1.5 million gallons per day of supply. When the Plover River floods, they've had some unsafe samples coming from Well #4 because of its proximity to the river. When they get unsafe raw water samples, even though the treated water is still safe, the City has a plan to shut that well off. That's another 2 million gallons per day supply that they wouldn't have. Well #6 and #7 in the airport well field, those both have very high levels of manganese. Manganese is very similar to iron. It's a mineral in large doses that probably won't kill you but it will make the water taste bad, look bad and smell bad. It will stain your fixtures. People complain about that. It hasn't been a problem because the 5 wells in the airport well field get blended with better water quality so they can run wells #6 and #7 by blending them. They couldn't run by themselves without the phone running off the hook. Stevens Point has 4 of their 7 wells that have some problems potentially. Another reason we and the DNR recommended that the City has to expand its water supply capacity. This is a letter Stevens Point got back in 2008 for their annual water works inspection. There is a paragraph down here that says: "The City must realize that not increasing the source capacity of the water system is not an option." So not only were we recommending that the City do something, but the DNR was as well. When we did recommendations, we did look at different places where high capacity wells could be sited along this buried bedrock channel where we knew the water quality was the best. No nitrates, we knew there would potentially be some iron and some manganese that would potentially have to be treated for. Iron and manganese are not a primary drinking water contaminate like nitrate is. That's what we recommended back in 2006, this area. It's an area owned by the City. We did a study 7 months later. We did a boring out in

the Boy Scout property. If you look at this area here, Riverview Drive, Hwy. 66, this is the Boy Scout property. This is where the Plover River is over to the right. Here's this buried bedrock channel that runs through this area. This is the area that used to be owned by the Boy Scouts. It was deeded over to the City but the Boy Scouts have use of that land in perpetuity but it's owned by the City. We recommended this area because it has a lot of advantages. It has separation between private wells and private septic systems. It's in a deep buried bedrock channel. It's far enough away from the Plover River. The DNR has concerns about putting high capacity wells too close to surface water courses. So that was our recommendation, to do some exploratory borings on this left hand piece of City property. The next year we did a more detailed study, put a test well in, put in some additional monitoring wells in that area. This is a graphic showing the Boy Scout area. The shaded areas show a 400' radius from known septic systems. When we started superimposing the septic system (*radius*), it really shrunk the area where the City could actually site a well and get it approved by the DNR. That's that red dot right there (on the graphic showing the well site). So we were slowly coalescing to a place where this location made a lot of sense. It was consistent with our long-term planning. It wasn't going to be a situation that wouldn't be approvable because of setback requirements, especially from septic systems. That's your setback from existing private wells. The closest properties are about 650' away from the well location that was recommended. So the recommendation was City owned property, it's a bedrock channel, it's west of the Plover River where there wouldn't be a nitrate problem, it has the greatest separation from the Plover River, it gives the greatest separation from private property and maintains the required setback from private septic systems. That's the origin of the recommendation of where the well is actually located on that property.

D.Schmidt Going back to the previous slide, where would the newer proposed high capacity wells be placed in relation to where Well #11 is? #12 and #13, where would their projected areas be?

Planton That's an excellent question, Dave. What was recommended with this location is using a horizontal collector well. Not using a vertical well. Depending upon the formation of the aquifer, a horizontal collector well would probably yield the equivalent of 3 or 4 times the yield of a conventional vertical well. We talked to Stevens Point, that if you want to have certain separation from the high capacity wells, we could potentially put 2 to 3 vertical wells on that site. The City had such success with Well #10 as a horizontal collector well that they thought it was well worth the additional cost of putting a horizontal collector well on this site. In addition to having wells that have lower levels of drawdown that a collector well has, it's much more expensive. This is the last well that Stevens Point will probably need to build for the next generation or two.

Perkins After the success with the high capacity Well #10, why did they, for budgeting purposes, go back to the thought of 11, 12 and 13 and conventional wells?

Planton That was part of that 2007 master plan where we said that Stevens Point has to increase their water supply capacity. There were different ways they could do that, with vertical wells, they have 6 of those, plus 1 horizontal collector well. We were somewhat neutral in the recommendation. Either of those facilities would supply the water needed. For vertical wells, you would need more land to spread out the water supply draw downs. The City wanted to go

with a horizontal collector well and we said this would be one of the best sites in the state for that kind of a facility for a number of different reasons. We worked in 2008 with the Ranney Corp. which is one of the only horizontal collector well builders in the country, or maybe even in the world. They've done all the collector wells in the state and many in the country so they have a lot of experience. They're were involved in the project team when we did this study in 2008, to give us a better handle on whether or not a collector well would make sense here, cost effective.

Prusak With a collector well, that precludes any further vertical wells in this site or this area?

Planton Correct.

Perkins That was one thing that confused me earlier. Being that #11, 12 and 13 were planned to be conventional wells versus now they went to a collector well and so there is no need for #12 and #13.

Planton This collector well will produce more than 3 vertical wells but costs about the same amount as 3 vertical wells. The City is getting much more for its money.

Bembenek You are saying a lesser draw down, correct?

Planton Yes. You are spreading out where you are taking the water. That's the reason the drawdowns can be spread out over a much bigger area. In summary, the project has been in the planning stages for many years, addresses the future water needs for now and well into the future, addresses the DNR concerns, provides additional supply and reliability for the City, it's sitting on a property with very large saturated thickness. (...*tape ends*)

Planton ...we want to put these screened laterals in the area where the sand and gravel is most porous. Not really fine sand, but it is really wonderful gravel in that area between 70' and 110'. We don't know where the bedrock is in that buried channel but it must be deeper than 160', how much deeper I don't know but I would guess not more than 200'. Given the separation from the neighbors and the Plover River, it's really an ideal location for a high capacity well. Here's the timeline: A lot of things happened in 2009. Quite a bit of approval from the state, not only from the DNR but water utilities are regulated by the Public Service Commission. They also have a say in allowing and approving any major capital expenditures by water utilities. They do environmental review as well. So that was granted in the spring of 2009. The City had a public hearing a couple of years ago. They got the approval for the design from the DNR 2 years ago. We got a tremendous amount of funding. With the stimulus, the American Reinvestment and Recovery Act, that money was available and the City applied for it. Of the \$2.8 million project, \$1.4 million was funded by a grant towards the project that doesn't have to be paid back and the other \$1.4 was a low interest loan at 2.2%. Timing is everything. Another \$750,000 dollars came from the Community Development Block Grant via the Dept. of Commerce. The City has been very successful in getting funding for the project.

Here is a schematic of a collector well. A conventional vertical well is a 16", 20", 24" diameter steel pipe that is placed into the ground with screens at the bottom of it. What makes a collector well different is you have this concrete caisson. This is what we have at Well #10 and

#11. The one at #11 is 19' feet in diameter, outside to outside and the concrete walls are 18" thick. They pour those in segments. They pour them in 10' lifts. As they put one from the top, they have a big crane with a clam shell that digs out the material from the middle of it and the 10' section sinks. They put new forms up and pour concrete. Strip the concrete forms, dig out the middle, it sinks. These laterals for well #11 are at 92' or 93' below grade. The bottom has a big concrete plug that is poured. It's pumped out and that was done last year between January and April of 2010. Once they were done with that, they go in and take these screened horizontal laterals, 8 of them all the way around like a compass out about 150' to 180' horizontally. If this was a conventional vertical well, you might have 7' of casing and 30' of screen. We've got 1,230' of screen all the way around a collector well in the best part of the aquifer at 93' where it's beautifully graded gravel. As opposed to a vertical well that you might be going through various levels of sand and gravel. That's what makes these wells so efficient and so productive. It's because you've picked the best part of the aquifer with all that screened area to bring the water into the system. The water rises up to the water table. The pump building is right above, which is being built out there right now. The water would be pumped from this building to a treatment plant. The plant pumps it into the distribution system down along Hwy. 66. There are just a handful of collector wells in the state. Wisconsin Rapids has 4, Stevens Point has 2 and there's one by a power company just north of Beloit, Alpine Power has a collector well along the Rock River. That's it. Collector wells are really very unique and they need to go into the right hydrogeology. There are a lot of them along the Missouri River, there's a lot of them along the Ohio River, there's a lot of them along the Platte River in Nebraska. It really takes a special area where these make sense for water supply.

Amman So the pump building is built or is being built? And the treatment plant?

Planton The treatment plant is at grade level right now. They just finished pouring the slab for the storage tanks on Monday. I don't have any photos but the next time I come to meet with you, I can certainly have some photos.

Devita What are the diameter of the screens?

Planton 12", 150' and the screen is the entire length. There is a 10' section right at the start. The caisson is as wide as it is because they do this like they bore a casing under a freeway or a railroad for water and sewer. They have a 10' section of pipe that they'll lower down and they jack it through a bulkhead through the concrete casing wall. They'll jack 10' sections at a time. They have a return pipe in the middle that's bringing back in the water and the sand and gravel. That's all because there is a head on that material that flows into the caisson. They pump the water out and move the sand and gravel and discharge it into a pond up on the top. It's an interesting way to do it and it's very efficient how they get it done. It takes awhile. They were all supposed to be at 160' but we told the contractor to sample the material coming out in every 5' section and if they run out of the gravel area and get into sand, then they should stop. So the laterals going out to the northwest are about 180', the laterals going out to the south are about 150' where they got out of the gravel and into sand.

Zimmerman Is there any overlap with that 400' for the septic system?

Planton We still have separation although one thing that did come up is that we have a buried sanitary holding tank because there's going to be a bathroom in the treatment plant. That had to be 200' away from the end of the lateral because that's what the DNR considers the end of the well. That point right there is the end of the well as far as the DNR is concerned. So from that point, we have to be 400' away from the septic tank or 200' away from a holding tank. It just so happened that they got going towards the northwest, towards our holding tank and they went past 165', so we had to move our holding tank further away. Five of the 8 laterals it wouldn't have been a problem. It was just that first one they did that went further. That's kind of how we determine how far to go out; on average, about 165' in all directions of the compass. So it's a unique well design but a very efficient well design.

The contractor got started in late 2009. The caisson was done in the spring. We did sampling of the private wells. We had Chet's Plumbing sample some of your wells within that 1,400' area. We had a meeting with the Town of Hull a year ago last summer to talk about what was going to happen. The test pumping was going to occur shortly thereafter in August. The well was completed late last year. It sat there, a 9' high x 18' diameter concrete structure that you can see with a concrete cap on top, looked like a missile silo with a cap on top of it. So Well #11 is very similar to Well #10. Well #10 has only 3 laterals where Well #11 has 8 laterals. They are expensive to build but with greater yields. We talked about the lower drawdowns but in places where they make sense, they are much more cost effective especially when there is treatment involved. In this particular case, one of the reasons we felt a collector well would make more sense is that the water had to be treated. So you are pumping water from the well to a treatment plant as opposed to pumping water from 3 wells that are further away to a treatment plant. So looking at the overall nature of saving money. This is the site with Hwy. 66 over here, Plover Heights Road over here. The access road was from over off Plover Heights Road. Now you've seen the road over here (*now off Hwy. 66*), that will be the permanent road to the facility. The water main is already here. The well is here, and the laterals are here. That's how far they go out. We have septic systems in various places (*outside the perimeter*) so we still have that separation from there, so that is what the DNR considers to be the well, not a conventional vertical well that might be a 24" pipe, but this is about a 350' diameter well area so it requires a special site that has the setback, has the land available and has the aquifer. The water treatment plant is being built there. You can't see anything now, but it's going to be up above grade in about a month or so. There is the water main that is in already and has been tested and is ready to go but won't be pumping water for at least another 6 months or more. If you go onto the site, you might see a big clear area to the south up against the airport property boundary. That's a storm water retention pond for any storm water that would be on the site. You don't see a lot of ponding in the central sands area but the DNR requirements are such that you can't go around them. Plus if there would ever be an overflow situation where pumps wouldn't turn off at the treatment plant and the tanks down below grade would start to overflow, they would flow down a channel that will be graded here and flow into here. It's overkill but the DNR makes you do it.

Amman Where is the Plover River on here?

Planton It's way over here. The Plover River is about 1,800' away. That was one of our criteria to get as far away from the Plover as possible to address any concerns about taking river water into the laterals. There's a collector well on Patch Street immediately west of where Patch goes over the Plover River. You look to the south, that's Consolidated's old water supply. Very

high iron. They went to City water in 1995 right after Well #10 was built and the City increased their capacity. Consolidated sold it to the City in 2000. We looked at that as being a potential water supply source for the City instead of this location. The reason why that wasn't chosen was because those laterals actually go under McDill Pond and they did some testing. There was some concern that water might be considered surface water. Ground water underneath surface water. No longer would you be treating for ground water which has more limited requirements, but for surface water which would have much greater requirements. Much more expensive. The direction for the future was to go with groundwater and this well (#11).

Prusak Pat, what was the purpose of going northwest to Hwy. 66 as opposed to going southwest and straight out across the airport property?

Planton The City would not allow underground water mains on airport property. That's the reason. It would have been much easier to not to have gone down Hwy. 66 and it would have been a little bit shorter to go down this direction and cut across the airport property down here. The airport manager was adamant, "You cannot put underground infrastructure on an airport." I wish I had a better answer.

D. Schmidt When that well comes on line, how many hours a day will it pump water?

Planton It will vary. The City has 7 other wells, so it might pump on average 8 hours a day. It might pump more if one of the other wells goes out of service. They don't have to pump 12 or 18 hours a day because they'll have additional supply they can spread out over that whole area. So there's our transmission main. I didn't hear of any complaints from any of the property owners. We will have the contractor back out there to re-seed some bare areas and cutting grass today or tomorrow. I thought they did a very good job. They replaced the drives. They replaced and cleaned out culverts. So that job is done and in another couple of months, you won't even know that there was a contractor that went through there with that pipeline. In the future, one the constraints will be, if they ever want to add capacity here, they'll have to have treatment, because we're only putting in a 5 million gallon per day treatment plant and this is a 16" water main in here, but down here (*near Torun*), it's 24". So right now, you can get 5 mgd at this point but you could get 10 million gallons per day. But you can't get 10 mgd through the 16" section. So when that has to be upgraded for more supply, this area here will need to have new infrastructure and they'll probably have to battle about if they can go out this way through the airport. But until the airport changes their philosophy, that won't happen. That's the reason the 24" main was put in now, that pipe size will be good for a generation or two. Nobody should need to have their driveway dug up again as long as I'm alive. That's the history of why the well was put where it was. Any questions?

Prusak The City never investigated the old law of water property in the corner of Brilowski Road east of the river?

Planton That little corner that the City owns?

Prusak Yes.

Planton We looked at that. The biggest concern, Russ, was nitrates. Even Well #10 which is at the end of the airport road, when it was built in 1994 and put online, the nitrates were at about 2, now nitrates are about 6. So there is concern that it's starting to draw water a little bit from the other side of the river where we know that nitrates are very high. Well #5 had nitrates of 9 or 10 ppm and that's right about at the standard limit. That was another reason why we wanted to get as far away from the Plover River as possible, we didn't want any recharge from the water that is coming from the east to the west.

What can be expected when you put a big high-capacity well out in this area around private wells? Usually that's bad news. Before the 1974 Michels Pipeline supreme court case, it used to be a water law based on absolute possession which goes back to English Common Law. If you had a deeper well than your neighbor, you could pump as much as you want. The groundwater resources were there for you to use. It was a property right. If you drained the neighbors well, that was too bad, he could drill a deeper well. That's what happened in the Town of Grand Rapids in the 1950's when Wisconsin Rapids put collector wells out in there and dried everybody up. The town's folks complained and the City said tough luck, drill deeper wells. That changed in 1974 and that is part of that other presentation I could talk about at a different time. If an owner of a high capacity well does not responsibly use water or damages a neighboring property in their use of groundwater, there is a cause of action. It can be explored and it can be potentially litigated. That's more protection than there ever was before for private well owners. It was all because of a case with Michels Pipeline and a Milwaukee Metropolitan Sewer District interceptor sewer. There were cracked basement foundations, dried up private wells and MSD said tough luck, the law of the land is the deepest well wins. The supreme court overruled the case law that had lasted for 70 years and then they had to decide how to put the new law together as this reasonable use-law for groundwater. The City has numerous monitoring wells in the area to check the water levels. There's one here out in the parking lot. You see that brown rusty little box in the woods, that's a cover for a monitoring well. A 2" PVC pipe that goes down in the ground. They have a number of them in the area. They put those in back in 1989. It's unfortunate that the drought was the year before but the reason they did that was because they had a leak in an aviation fuel tank at the airport. At the time, they thought kids working there were stealing aviation fuel. Those aviation fuel tanks are just upgrade from those airport wells. That's where 90% of the water supply for the City comes from. When they finally figured out the kids weren't stealing the aviation fuel, the only possible explanation was there was a leak into the groundwater a year's travel time away from the wells. You never saw a City react so fast in your life to fix that problem. That's when they started putting in monitoring wells so you would have an early warning system to let the City know if there is potential contamination migrating to the water supply for the City. They are there and the City samples them monthly both for depth, nitrates, iron and manganese. Some of the information we looked at indicates higher nitrate levels in the water. Not excessively high, but higher in the shallower areas of the wells. Higher iron and manganese in the deeper wells in the area.

Zimmerman So the City wouldn't be too happy with a filling station with gasoline tanks?

Planton The City has a well-protection overlay zoning in conjunction with the County. It's everybody's water and you'd hate to think somebody would put in something like that just to spite the City when they could also be contaminating private wells at the same time. It doesn't take a lot of gasoline to contaminate millions of gallons of water. One of the reasons there is no

development at the Hwy. 66 and I-39 interchange, even though they'd love to put a mini-mart service station there, but that's real close to the City wells and the City won't allow it. The City does have overlay zoning to preclude certain types of land use.

Zimmerman How can they do that and allow Fleet Farm to have a gas tank right next to their overlay zone? And they allowed them to expand.

Planton That may have pre-dated what the City had in place.

R. Schmidt That was before the wellhead protection ordinance that the City had in place.

Zimmerman Not the expansion it wasn't.

R. Schmidt The expansion was allowed because it upgraded the technology for leak detection.

Zimmerman Okay. That's my point. Then if you put the greatest protection out there, why can't they have a gas station? I'm not trying to belabor the point. I'm just saying that if Stevens Point does it for one of its citizens, why can't it do it for another?

Planton Tim, I can't speak for the City, but your right. The groundwater essentially belongs to the citizens of Wisconsin so it's just like the surface water sources. The problem is that a lot of the easy water has been located. The City has put their wells within their jurisdictional boundaries. Now you have cities looking to place wells outside their jurisdictional boundaries where you can't have an overlay zoning. The City can't, in the Town of Hull because it's not City property or City jurisdiction. They have to work and educate folks that what is good for groundwater protection for City high capacity wells is also very good protection for private wells, because private wells would probably get contaminated first. Closer, shallower and contaminated water isn't good for anybody. It's a penny of prevention for a pound of cure. It's much easier to protect your groundwater now than to have it contaminated and have to remove it later, without a doubt. Does that answer your question?

Zimmerman Sort of. I'm just playing devil's advocate. I wasn't saying anyone in their right mind is going to do that.

Planton The City realizes they have to be a good neighbor to the Town because the Town of Hull has private water supplies for your homes and the plan is to co-exist with everybody and that's one of the reasons I'm here. The first time when I wanted to come a year ago, the mayor said he wasn't paying me to come here. I told him he didn't have to. I was going to go anyway because #1, I want this project to go good and #2, when my family moved up here from Chicago in 1987, the first house we looked at was in the Town of Hull, not too far from here. I walked into the basement and saw a well. It was a sand point with a pipe coming out the side of the basement wall into a pump right into the plumbing. I lived in Sheboygan and out in the country, you have wells with such high levels of iron that you can't drink it, it smells terrible. So the first thing I did was to go to the kitchen, grab a glass, took a drink and I couldn't believe how good the water tasted. I said, "This can't be groundwater." It tasted like Lake Michigan water that I was used to. So the groundwater quality in the Town of Hull is very good. I couldn't believe it

wasn't treated because it tasted that good. That's one of the benefits of living in this area where the water is plentiful and very good. The point I want to make is that groundwater levels do fluctuate. Ray had mentioned that the direction (*flow*) can sometime fluctuates, the levels can fluctuate too. That can be determined by measuring levels in the monitoring wells.

Perkins The monitoring wells data; has the City determined if they are going to allow us access to that information?

Planton Robert, that's above my pay grade. Speaking for myself, there's nothing there in the data that the City is trying to hide. The reason those monitoring wells were put in is to make sure that if there is a contamination plume somewhere, they could find it before it got to be catastrophic and affect the water supply for 25,000 people. That's why they have these wells out in the area and do religiously sample them. In fact Kim, the director, asked me if they should keep sampling these things every month. The testing that needs to be done is kind of expensive. I said, "For awhile yet I would. After awhile you could go down to quarterly or semi-annually." It's hard for us engineers and hydro geologists to analyze things without the data to tell you what is going to happen.

Perkins So that's something we'd have to address with the City in terms of what we would have to do as far as sampling for the Town of Hull is concerned?

Planton We have some data. We told all the property owners that it would be kept confidential. So I'm not at liberty to share some of that stuff, but I could share some general findings of water quality of the 44 wells we had tested. As far as levels, levels are the big concern, whether or not this high capacity well will dry up anybody's private well. I lived in the Village of Plover before we had the water system and I had a shallow sand point too. I knew a little bit more about what's going on as far as how water levels fluctuate, but they do normally fluctuate from dry years to wet years. In/after a wet spring, the water levels are high. What we were able to do was look at 3 monitoring wells in the area and look over the last 20 years how much the water levels have changed. We also use these 3 monitoring wells when the well was test pumped in August 2010. So monitoring well #3 is over at Skyline and Somerset, monitoring well #4 is over here just southeast on the property the City owns and monitoring well #7 is over here not too far from the warming house (*by Green Circle*) and high pressure gas line just further south of that. Monitoring well #3 at Skyline and Somerset, this is a graph showing how the water in the well has fluctuated over 20 years. Groundwater doesn't stay at a static level, it rises and falls. It can be influenced by other high capacity wells in the area or a real dry year like these years that were relatively dry here and here. In 1988, unfortunately the monitoring wells weren't in place because I'm sure with the drought of 1988 that everyone remembers, the water monitoring well would have been really low. Remember 1993, the Hatfield Dam that failed because of all the rain, that's when the water levels were highest. Our depth to groundwater was lowest. There was a 5' variation over 20 years which is very common. This is monitoring well #4, southeast of the Well #11 site. A narrow band, maybe because it's closer to the river which might have some influence on groundwater levels, possibly, but again, a fluctuation there. On monitoring well #7 over by the warming house, a 6' fluctuation. The point I was trying to make here, was that when the private wells were put in, the plumber or well driller takes that into account. They're not going to put in your sand point or drill your well just barely into the water

table because they realize too that water levels change. Who knows that they're drilling the well when it's been the wettest spring ever. So there is going to be a little bit a fluctuation there that everybody has to take into account when they put in a private water supply. This is what I told everybody a year ago when I met with them. We did borings in 2007, a test well in 2008, we pumped the test well in 2008 for 72 hours. Made some predictions based on a rate of 5 million gallons a day for an average of 12 hours per day, assuming no rain, no snow, no recharge to the groundwater of any kind. We came up with some projections of what the drawdown would be within the well area. Within 200' we anticipate a 3 foot drawdown of water from where it would normally be. At 1,400' away we anticipated a 1 foot drawdown. Those estimates were conservative. I told everybody it was worst case possible scenario. So when I talked about these numbers, I knew in the back of my mind that those numbers were very conservative. Test pumping in August was meant to prove what they actually were. This is a map that John Holdridge has in his office, that we refer to, you see the bulls eye. The 3' drawdown, 2' drawdown and 1' drawdown area. The City agreed that everyone within a potential 1' drawdown area, those are the private wells that we would test. Those would be the wells that Chet's Plumbing would inspect. So that's how that was determined. The 1' was somewhat arbitrary but we had to draw the line somewhere. So this is what we anticipated we would have for drawdown pumping 5 mgd over 12 hours or 2 mgd over 24 hours. This is a graphic showing a blue line that shows the depth of the wells. The top of the red line shows what the normal static water level is and what the pumping water level would be with Well #11 pumping at the 5 mgd rate. All these wells further away, shows what the drawdowns in the wells would be and if we're getting close to de-watering anyone's wells, and we're not. These wells are the ones closest to Well #11. The blue line shows where the groundwater is traveling from. Ray Schmidt's map showed that. If we take a cross section, we took a look at well construction records of wells in that area and added the same graphic. The only one that is somewhat of note is this one over here, 3,000' away. It looked like even the static water level must be getting pretty close to that well's screen or even depth. But at that far away, there would be minimal impact on long term water levels from the pumping of Well #11. That was all theoretical.

Let's talk about actual. What actually happened when we test pumped last year? We pumped for 72 hours, a pretty standard test pumping period, for 3 days in the 3rd week of August 2010. We went back and forth; what should we test pump this well at? Do we want to know what it can do? Because once we do the test pumping and this treatment plant is built and the pumping station is built, we'll never be able to test pump it at a higher rate with the pumping equipment we have there. We pumped the water to the Plover River, 2,500' away, ½ mile away. I made a determination based on our calculations, we're not going to de-water anybody and I'd just as soon find out now when we have the equipment there and the contractors there, let's pump it as hard as we can for the 72 hours and let's see what happens. Hopefully nobody had any problem with their wells between August 16th and 19th of last year. If anybody did, I didn't hear about it. But that's when the test was done. Remember the plant and the pumping station are only designed for 35,000 gpm, or 5 mgd. We test pumped it at 13 mgd. That is also Stevens Point's maximum daily demand that they have to meet. This well was pumped at that rate which means this well could potentially do all the water that Stevens Point would need at its maximum day in the summer time with 7 other wells not even operating. There is that kind of capacity at that location. We monitored water at Well #11 and the 5 on-site observations wells and the 3 monitoring wells. The 3 monitoring wells are the same ones that we looked at with the long-term trends for over 20 years, monitoring wells, #3, 4 and 7.

This is the ultimate results. After 72 hours, the water level was already coming back up a little bit. The drop was essentially almost none. A little over 1" not far away. This inner ring here which coincides with that 1,400' radius where we anticipated it would be a 1 foot drawdown pumping at 5 mgd, it was 1.1 foot pumping at 13 mgd. In this ring here, it was between 4 and 5 feet but again, we were pumping at 2 ½ times what this well will normally do and treat in the foreseeable future. We know those numbers are conservative. This bore that out. There is a tremendous amount of water supply there with not a lot of draw down. It's a function of the collector well design and that nicely graded gravel between 90' and 100'. Also the 1,230 feet of screened laterals. This is what we projected. Let's assume 5 mgd, 24 hours a day for 30 days straight, no rain, no snowmelt, no recharge. That's what we anticipated for a drawdown. That's theoretical. This is what we actually got. See the 1.1 feet? We expected 2 feet of drawdown at 5 mgd. We had a 1.1 foot of drawdown at 13 mgd. I kind of knew this was going to be the case going in but I wanted to be conservative when I met with the folks of the Town that we weren't trying to mislead anybody about what they were expecting for drawdowns. Pumping at 5 mgd, for 30 days straight, which isn't going to happen with the City, they wouldn't pump it for 30 days straight without resting the well, without having any recharge, you'll have very little drawdowns. This is actual data that was recorded last August and it's very good news for the City and for the Town of Hull.

Amman Pat, does the fact that it was rather rainy and wet last summer have any relationship whatsoever to the results of this test?

Planton It wasn't real rainy in August. Maybe earlier.

Amman It had been before that, more so than normal.

Planton We looked at water levels at Well #11 and they didn't fluctuate a whole lot over the summer. So I wouldn't anticipate a tremendous amount of change. There were normal fluctuations within that band in the area.

B. Devita Do you think the actual recharge area, the majority of it is still coming from that buried channel, correct? So it's more of an elliptical area?

Planton I don't know how deep that buried bedrock channel is. It's more than 160'. The laterals are just between 90' and 100' so that is where the water is being pulled in. The potential is from the water below and above and some from horizontally. We might be pulling some from east of the Plover River. But the vast majority of the water would be pulled from the northwest, where the water is coming from.

The last thing I'm going to talk about is groundwater quality. Quantity is important and quality is important, especially for drinking water. We have done water quality sampling and testing in August 2007, 2008 and 2010. We did all the safe drinking water requirements, all the secondary requirements for water quality parameters. The groundwater meets all federal, state and primary drinking water standards and all secondary standards except for iron and manganese. If you were wondering if that might be a problem, that's why the treatment plant is going in. Because those levels are such that we don't want to pump water with high levels of those into the system. One of the reasons we did the sampling was because of what potential

impacts could there be. We needed a baseline. We don't anticipate any changes in the groundwater. Not to say it couldn't happen, but we don't anticipate anything happening like that. The groundwater from Well #11 has been tested, private wells within 1,400' have been tested. The County recommends that private well owners sample their water supply at least annually. It's your own private water supply system. For less than \$100 you can get the same sample test results that were done for the 44 wells that were within that 1,400' area. I would recommend it, especially if you have younger children at home. It's just good sense to pay less than \$100 a year to insure your water quality is safe.

So the question was how will this change the future of your water supply. That's always a concern when a high capacity well goes in. The City has a lot of testing requirements. They do testing every year to make sure they meet the DNR and safe drinking water act requirements. In June and July of last year, the City paid Chet's Plumbing to come out and inspect wells, take samples and take them to the lab over at the U.W.S.P. The data is all confidential. I have a spreadsheet with all that information in there. We could just delete the names and addresses or parcel numbers and share that information with the Town. But I'm not sure how useful that would be without a specific location to go with it. But that was the agreement the City had with the owners, that they wouldn't share that information. You could talk internally if that information should be shared.

Perkins Go back to the previous slide. On the routine testing, did we find out how the University came up with the particular group of contaminants that they tested for?

Planton They have a homeowners package. Bill, you might know more about this than I do.

B. Devita There is a package of general water quality characteristics that we do around the state. Nothing that was specific to this project. We were not advised or any other recommendations made by the City for homeowners that we do anything else. This is just a standard package we do to assess the quality and very general characteristics of the water.

Planton The only ones of concern from a primary drinking water standard would be lead which doesn't come from groundwater but leeches from fixtures and plumbing, copper, arsenic, nitrates, bacteria and that's about it. Everything else is esthetics or secondary.

Bembenek You don't test for mercury?

B. Devita We do but it's generally not part of the package because mercury is not usually found around this geological formation.

Bembenek I thought somebody said they usually test for it if you are around a lake. Does that make sense?

McGinley We don't normally test it in groundwater around a lake. It could certainly be an issue in lakes. But it would be a biological form of mercury not really found in groundwater.

Perkins Things like potassium, sodium, they aren't primary or secondary so why would I want to pay to test for those?

B. Devita Sodium, there are some health concerns with high levels of sodium and it could be indicative of road salt or possibly an agricultural field that uses it.

Planton You could have a water test for any number of contaminates. It's like a menu. But they have a package set up for metals and homeowners parameters. The test is not that expensive.

B. Devita We charge \$16 per metal, for example. If you wanted to check for copper by itself, you would pay us \$16 to do one metal, or, we could do the package of 8 or 10.

Perkins There are also a few things that are toxic that are on the list that were not tested for in the routine package.

Planton We had somewhat of an idea from the testing we did August of 2007, 2008 for organics and pesticides and herbicides, those kinds of things, for radionuclide, radium, radon. This gives you a snapshot. You can do a lot of testing and pay a lot of money to do that but if this thing costs \$90 to \$100 to do that test once a year, I pay \$80 a quarter for my water in Plover. I have peace of mind that the water I am drinking meets all federal, state drinking water requirements. I had a private well in northeast Portage County and also a private well when I was living in Plover for 4 years and you're kind of living on faith when you can't smell that the water is bad, you can't taste anything bad. You can't taste nitrate, you can't smell nitrate. There are other contaminates that you can't see or smell. It doesn't mean your water is okay. I'm not advocating that water utilities do it perfect either, but they have a tremendous amount of testing that they do to confirm that the water is safe.

Here is the general information you were interested in: 44 out of 59 private wells did get tested in the 1,400' radius. The good news is that no unsafe samples were detected. Only 1 out of 44 had a nitrate level of over 10 ppm or even close to 10. I'm not sure what that was but that one was at 19. High nitrate isn't necessarily a concern unless you've have infants at home. If they consume water with high nitrates, they can get methemoglobinemia, blue baby disease. Because their bodies aren't as developed as adults, the nitrogen can replace the oxygen in the bloodstream and that's why they can turn blue and it can kill them. That's why it's an acute primary drinking water standard. But I'm sure there are people out in farms that are drinking water that have nitrate levels of 10, 20 or 30 maybe and still live to talk about it. But it's a primary drinking water standard because of the danger to infants. There were some higher pH ranges which I found interesting but it's nothing out of the ordinary. You go over to the Town of Grand Rapids where Wisconsin Rapids gets its water and the pH is about 6 ½ or 7. That varies with the geology and the minerals in the water or the ground. One water sample tested slightly corrosive meaning that it would have a tendency to dissolve calcium carbonate rather than scale. If you had water that was scaling, that's where you have the hardness compounds. You'd rather have slightly scaling water than slightly corrosive water but it was minimal so I think that is a testament to the water quality, the geology and the higher pH so that was really good news. No arsenic, no lead, no copper concerns or even close. Less than 10% of the wells have iron over the secondary standard of .3, that I found pretty amazing. And only one had manganese above

the secondary standard and just barely above it anyway. When I said the water quality in the Town of Hull was good, I probably should have said it's great. That's great water.

Prusak Were those last two with iron and manganese in deeper wells below 40'?

Planton I'd have to look at my spreadsheet, I'm not sure. That information we all had tabulated and some of the correlations you can do but I would suspect they are deeper, Russ. I can't say that conclusively.

The pump station is built, the walls are up and the roof is on. The treatment plant is at ground level. The contractor plans on having the buildings themselves done this fall but the actual pipe, electrical, controls and generators that are going into these facilities won't be done until late this year (2011). Ellis Stone is the contractor. They did a great job to date. They would like to be done with construction by the end of the year. I don't see how that is possible given the schedule that needs to get completed. We gave them until May (2012) to get done. If they want to do it sooner...they are somewhat beating that schedule. All I can tell you at this point, I'm not sure when Ellis is going to be done. But the plan is to be done by the end of the year or the beginning of next year and they'll be testing start up sometime maybe in the first quarter of next year. I can't pinpoint it because, contractually, Ellis Stone has to be done before Memorial Day, so when they get done is up to them.

Amman Pat, did you initially say in a previous presentation that they would be finished and potentially pumping and on-line by the fall of 2011?

Planton At a previous presentation I did say that. What happened was the DNR has been short staffed and in the past, we could get approval for complexes like this in 60 to 90 days. Then we'd finish the plans, send it to the DNR, bid the project, and get DNR approval before we had a contract awarded. In this day of age, I told the City utility that I can't guarantee when this plan or proposal would be done. It could be 90 days, it could be more. So I didn't want to do any bidding on the project until I got the DNR approval. It took 5 months, 150 days. So the plans were in to the DNR the middle of May of last year and we got approval in October.

Amman So it was more of a paperwork holdup?

Planton Yes. I said if we didn't have the approval of the DNR and if we have some major changes...we put the bidding out in October and opened bids in November and luckily there weren't any significant changes by the DNR. That's why the fall of this year isn't going to happen. The contract started to run in December or January. We gave them almost 400 days to finish. I didn't want to short change them for time and have the City end up paying a premium to get the job done fast. The City needs the water in the summertime so getting done in December or January is no big deal. I wanted to make sure the contractor would have it done before Memorial Day (2012). It's been delayed, if Ellis Stone is right, by a couple of months. If I'm right, then about 4 or 5 months.

R. Schmidt When that well starts pumping, will that actually reverse the flow in some of the City water mains?

Planton That's a really good question. Especially for people that have City water. They looked at that. There are a couple of issues going on in the City's distribution system that on this graphic, shows the water main at Torun Road. Right now, the water that serves the City runs out of the City in the water main up this direction so the water is always going from this point in this direction. Once this well goes on line with the treatment plant, the flow here will definitely be reversed. There will be times, depending upon what other wells are operating, there could be some reverse of flow, but definitely the water between Torun Road, Hwy. 66 and here, probably 90% of the time is not going to be to the City. Sometimes that's a challenge in big water systems. You reverse the flow if you start getting sediment in the water mains. You might have some additional flushing that should be done before something goes on line. That's part of having a distributive supply system as opposed to a town like Sheyboygan where all the water comes from Lake Michigan and the treatment plant and always comes from one location so you never really have a reverse flow because you only have one water source.

B. Devita Was the testing confined to just the Plover Heights subdivision?

Planton No, everybody within that 1,400' radius. We had sent the letters out and for the first 10 days, nobody responded. It wasn't costing them anything. If it were me, it would be good information to have anyway. Everyone within this diameter could have their wells tested. Even though these folks were outside of that area, we said they are in the same subdivision and get the same water so we'll include them. So anybody who straddled that boundary or called and asked if they could get in, within reason, the mayor was pretty accommodating. The whole purpose for doing this is to protect the City. There have been situations where people have called up after a facility has gone on line and said that the new well and treatment plant that just came on line killed their expensive tropical fish. I've seen that happen and it had nothing to do with the water system. This happened I think in Watertown where someone called up and accused the utility of a new treatment plant going on line and killing their expensive tropical fish. The guy thought for sure that was what happened. But it wasn't the new facility because it hadn't actually started up yet. It was ready to go, but hadn't been turned on yet. So in case there is a water quality issue or a water level problem, I'm not saying it would be purely the responsibility of the City and Well #11. Everyone has older wells, they can plug up, things can happen. The City wants to be proactive and all the wells that were tested, a flow test was done. Chet's Plumbing ran water from a hose into a 5 gallon bucket and timed it to see what the flow capacity was of each of these private wells. They range from anywhere from 2 gallons a minute to 8 gallons a minute. We have a record of that so if someone says their well is dried up, we can measure the water levels and compare it. If the well is not yielding as much, we can compare it. If someone says their water quality changes drastically, we have water quality data we can compare it with. If it would be proven that the City's well has injured private well owners, there is recourse to fix that and the City would be the first ones to try and make it good. I will offer to come back...*(couldn't make out the rest)*.

8) WATER QUALITY DATA FOR THE TOWN OF HULL.

McGinley Water Quality Data

When I talked to John H. about this, we were going to put together a brief summary of this information we have in our testing data base. I'm not going to assign any of that information to a

specific location. This issue that Patrick mentioned about confidentiality, we don't....we are a public facility and we do view ... the people that become part of this larger data base, that we use in various education programs. We test water all over the state of Wisconsin and a lot of times do education programs related to that, the quality of water in selected areas. What I did today was I took a preliminary look at our data base. I collected all the information we had that appeared to be located in the Town of Hull. I have a couple of slides and want to make a really brief comment about contamination and water quality. It was already talked about with Ray and Pat. But this is a slightly different way of looking at that same situation. This is a cross section view on this slide. With Ray Schmidt's maps, we were looking down on it. If you think about groundwater and look at this picture, this may be one water table elevation and this may be another one, within the contour lines that they were showing us, for the Town of Hull, coming from the northwest about half way between the 2 rivers and then heading over to the Plover River. So you have high water in the middle and groundwater flow in this direction. Obviously there are a lot of things that could be in that water but the other side of this is that this probably isn't rocket science. Anything that is going to be in this water is got to be either something that's coming in the water, or it's on the ground or the surface or something that interacts with the water through the soil. This is a relatively small system. The water comes in as rainfall, a fair amount evaporates back up through the plants but then, in our area, 8"-10" a year actually works its way down into the groundwater and that's the water that's traveling to the streams that Ray talked about. There are lots of things you could have in the water but it's going to have to be things that somehow got into the water in this area (*local Town of Hull area*). It's not really that complicated.

Examples of what you might find in water, some things we look for are natural contaminants like arsenic. We talked about radioactivity; that would certainly be a possibility if someone is collecting water closer to bedrock. We talked about nitrates, fertilizer and septic sources. You could have fuel in the water, Pat mentioned that. Of course that means you need to have a source of fuel. Benzene is a constituent of gasoline so there could be a gasoline tank here that if it was leaking, it could show up in the water. Other solvents, I put trichloroethylene on there, that's an industrial solvent. Pat mentioned testing water for all the things listed in the Safe Drinking Water Act. That includes a lot of these compounds. You might not have to look for these if there's no chance they would show up in your water. Another possibility would be pesticides. If you are interested in looking at lists of standards and guidelines, there's a lot of different things out there. Pat mentioned the Primary Drinking Water Standard. The EPA is involved in setting those standards. Wisconsin enforces those standards. There's also groundwater quality health standards in Wisconsin. There is also advisory levels for human contaminants. If you're interested in a good reference, I put that on here and we can get that to you, a list of contaminants that have different types of standards or limits or suggested concentrations that you should stay under. These turn out to be a pretty long list, they're all encompassing. There's all kinds of industrial contaminants and a variety of pesticides on there. For a township like this, it just depends upon if that's the type of thing that might be likely to show up in the water in this area.

Here's a preliminary overview of our test result. It's aggregated by days. We look for just a few contaminants, we look for contaminants that would include nitrate and arsenic and some pesticides. Bill Devita does a lot of pesticide testing so if you have specific questions, he can certainly help us with that. These are screening tests to begin to look for a group of or a class of pesticides to try to find atrazine and related compounds. Also information on chloride.

Chloride can be a groundwater contaminate. It's not really a health base contaminate. The guidelines I have listed over here for chloride, the standard is 250 milligrams per liter. It really is based upon taste. If it tastes salty, it could be an indication that your groundwater is acquiring something if it's getting up to those high levels.

Let's take a quick look at these numbers. For nitrate, out of 490 samples that were analyzed in the last decade from the Town of Hull, the average was about 6.1 milligrams per liter. Out of all those, the highest is close to 40 so it certainly can be high but the average is lower than the standard guideline of 10. Look back earlier on samples collected the decade before in the 1990's average 5.5. It's a little hard to interpret, these were samples collected from different wells so I would be reluctant to identify trends as much as to point out what we have for results so far. The decade before, another almost 600 samples with 5 milligrams of nitrate. We found nitrate in all of those decades.

(website for additional information: dnr.wi.gov/org/water/dwg/heath)

Zimmerman On your nitrates, has the trend been for these wells that are pretty high in nitrates like averages and means and everything like that gets to be a real tricky number to swallow, you can play with numbers. But if it's 38, the range from 20-38 and in 1989 you had 2, then 5 and then 10, what's the trend type and the vary....if you compare that you did 200 and 500 and 700 samples, the average is going to stay about the same. So for the very higher ones, has the trend been to double in size for every 10 years?

McGinley I don't think I could say that. There is actually a setup well that you could use to initially look at trends, that's a public water system near a private well. You have a couple of mobile home parks, any of the taverns, they all sample for nitrates typically every year. So if you wanted to look at trends, that is publicly available. We don't usually do the testing for them, but the information is available. That would be a place to look at trends. I didn't look specifically at this group to see how many wells we had in here that were the same wells that were tested each time so I'd be reluctant to develop trends. If that's an interest, maybe we could focus on that for the next discussion.

P.Gjevre What do you attribute the decline in samples to?

McGinley Yes, that's kind of interesting. I don't know. There's probably more homes, right?

R.Schmidt There's about 2,200 residences in Hull. It looks like only about a quarter of the folks are sampling their water versus about a third in 1990. Over 10 years.

McGinley Sometimes people get their well tested, then time flies before they get it tested again.

R.Schmidt Probably about half of those arsenic ones were tested by the City in the packages for those 44 wells.

McGinley Anytime people do the metals package, which gets them the measure of lead which could come from the plumbing, the arsenic is also included in that. The next group on there, you see the guideline is .01 mg per liter. In the testing of the 80 some samples we did, we didn't find any that exceeded that. That doesn't mean there isn't the possibility, but there's certainly no evidence there that there's a lot of arsenic in the groundwater. That's probably not surprising as that's more of a geologic contaminate. The type of geology you have here isn't typical for where you'd expect to find arsenic. Like Pat mentioned, it's generally pretty good quality water. The hardness is around 140 milligrams per liter of calcium carbonate which is a pretty nice hardness level. That's of the untreated samples. I can tell when people treat it because then the hardness is almost zero in the analysis. We have a 7.8 pH which is a nice base water composition. Any other questions? Obviously, we don't look for everything. That was a comment made earlier. We've designed these packages to look at things that are likely potential problems in the water supply and try to keep the cost reasonable. If you go back to this list, you'll find a lot more compounds on there. I would direct you to think about the simplicity of the system. It's water coming in and flowing out and somehow it would have to interact with these contaminants in that area for it to show up in the water.

Wilz One of the objectives that John H. had put together was possibly getting into districts. In terms of the those numbers you were showing, do you see patterns that certain areas have like the west side versus the east side of the Little Plover? Is there a significant difference in the nitrate levels?

McGinley I think we'd have a scientific reason to believe there would be, but I didn't do that data. Certainly there is a reasonable hypothesis....it wouldn't be that hard. Not all the older data is really located that well. We try to assign each well to a 40 acre area so it isn't hard for us to aggregate and to do averages without getting real specific on well locations. If you go that district route, it would probably be easy for us to circle certain statistics.

Wilz We could probably find out, like Pat had mentioned, there's a reason why Stevens Point is on one side of the Little Plover versus the other, for water quality.

Planton I have a graphic that shows it. When we were looking for well sites, we got information from Portage County and you get to the Town of Stockton all the way to Hwy. J and the nitrate levels are 10 to 40 ppm everywhere.

McGinley It makes sense if you start crunching these numbers, we get 30 some inches of rainfall a year, 10"-12" of that is groundwater that's interacting with 40 to 50 pounds of nitrogen per acre.

Planton Stevens Point Well #5 behind the Hilltop is right by the 18th tee, the 17th green and it's just upgrade from the golf course. They might fertilize the golf course a bit. There's probably some nitrate coming from some fairways over there.

Perkins With your database, would you be able to determine which particular tests that residents should routinely have done on their water? Then at a normal annual thing and then the

option from that would also be how do you decide or when, or if, you do check for things that aren't in the normal routine package? Depending upon how things might change.

McGinley I keep going back to this slide because it really is the story here. If there's a septic drain field here and my well is right here, then the water is flowing this way so...if I have any other sources of contamination, that's...

Perkins It's fairly easy to come up with a standard set to do testing?

McGinley Yes and no. I would say yes, certainly look for nitrates. The conventional testing doesn't necessary give you everything that could be potentially coming out of there. If you ask me if a certain person uses a lot of ibuprofen, is that going to show up in my groundwater, that's a little bit more complicated than for me to just run an ibuprofen test. That's not a real standard test. People can do that and there have been studies where people have looked at different things coming out of septic systems to try to figure out if that's an important issue or not. Some of that isn't really standard.

Planton What I would do if I had a private well in the Town of Hull is check for nitrate and coliform bacteria every year because if you sell your house and someone is going to get a mortgage to buy your house, it will require a test for those 2 items. The time to find out if you have a nitrate or coliform bacteria problem in your well is not when someone is putting an offer on your house.

McGinley Something like nitrates will give you a pretty good indicator, if that's not in the water, then you're less likely to see some of these other things.

B. Devita On that homeowner package, and I'm not here to sell services, it has testing for contaminates and also water quality characteristics. Nitrate and bacteria would be contaminates and it tests for other things like alkalinity and pH, conductivity, these are water characteristics. In the lab, we recommend testing about every 15 months. That way you would see some variation with the seasons in your house and well. In monitoring, you certainly would be concerned about your contaminates that might pose an immediate health risk but also these characteristics might change gradually over time. That's something I think the Town of Hull should be concerned about. Even though you made a very clear case that you're not going to show drawdown in these wells in the Town of Hull, there might be flow influences. There might be accelerated flow through the recharge area which might potentially alter water quality. So the general homeowner package is \$44 and it's suggested at every 15 months. It's a pretty good package. I think testing for nitrates by itself would be about \$15 and bacteria would be another \$20. So you could do those testings individually for approximately \$35 or you could have the whole thing done for \$44. Again, pH, hardness, conductivity, corrosivity index is calculated. It's a reasonable package that gives you a pretty good picture of your water quality.

McGinley You also have chloride in the package and that's this one at the bottom which is another interesting thing to show where that water is moving in the Town. Septic systems could be contributing chloride. It's another indicator of where your water is flowing.

B. Devita If you see changes in your water quality based on these contaminants and characteristics, then you might want to proceed with further testing, get into the metals package. The Town of Hull doesn't seem to have a lot of pesticide use so there's probably not a lot of reason to test for things like that.

G. Laug So what if you do find nitrates in your well after it's tested? What can you do?

B. Devita You can always treat it (*the water*).

McGinley A water softener is not going to take it out, you'd need a system specifically designed to take it out. That's where you'd make a decision to treat the whole household water system or just some portion of it used for drinking. It would be rare to have a whole-house treatment for nitrates.

R. Schmidt Or, you could buy your drinking water or get it from a known safe source. Most of these contaminants aren't going to affect skin contact, clothes washing, bathing, anything else you use in the house. It's the drinking water, the water that you consume that's of concern.

Planton And high nitrates is only a concern if you have infants in the house, less than 6 months of age, or pregnant or nursing women.

R. Schmidt Actually the state division of health changed their advisory on nitrates that anyone who consumes water above the 10 ppm standard on a long-term basis might be at risk because of the other things that are in the water that would combine with the nitrates, that there may be some other issues there that we're not aware of. The caution is for anybody using water above 10 ppm on a long-term basis. But it's especially acute for infants, pregnant and nursing women.

9) FUTURE DIRECTION – Task Force Discussion.

Bembenek Anybody have any idea which way we should go? Ray, did John Holdridge talk to you about possibly having someone take water samples?

R.Schmidt John asked Paul and myself if we might be able to map the water samples that have already been taken. Maybe which wells have been sampled multiple times so that there might be a trend developed there that we could look at. Then look at the holes in the data where we might need to do more sampling. That is something that could potentially come out of another meeting.

Prusak In the City test wells, do they test for anything other than the water level at those wells?

Planton The monitoring wells?

Prusak Yes.

Planton They test for nitrate, manganese and iron.

Prusak So they have a history (*data*) for all those in those monitoring wells?

Planton I think it's monthly. I think they have a tremendous data base. I would think they would share the data, I'm not sure why they wouldn't. But that's not my decision. You potentially already have a nice data base of information going back 20 years with at least those 3 things.

Prusak Mel, going back on some of those test wells, did we have test wells in when we were thinking about the Village of Hull? That goes back to when Joe was here putting a well in at the same location. Did we have test wells at that time?

Bembenek No test wells at that time. It was the late 1970's?

R. Schmidt The City had them when I was here which was in the 1980's.

Bembenek When the City put them in?

Prusak When Hull was thinking about putting in a well. We had some wells around Town and I'm pretty sure that one well that is down there on the corner of Skyline is an overlap from some of those original

Bembenek Where the green circle goes on Hwy. 66 where the farm house is? That was almost purchased by the Town of Hull.

Prusak Correct. Where the test well is, that was potentially the Village of Hull well site.

Bembenek That was voted down during the time when Hwy. 10/annexation all that, and where the Town was going to get the sewer from the Town of Plover at that time.

Prusak I'm pretty sure there were some test wells at that time scattered around this area.

R.Schmidt I don't know of any.

Bembenek I only know of the one where the possible well would have been (*for the Village*).

Perkins Maybe the first thing we should determine is what information we already have access to.

R.Schmidt The City's monitoring wells kind of wrap around the City well field. It doesn't cover the whole Town.

Bembenek Anything else you'd want for the next meeting?

Planton Going forward, maybe you would share some of the costs of the testing that's done? If it's good information for you and for the City, maybe that's a carrot you can throw out

there too. Just a thought. Because I know they are going to potentially start to scale back their testing. Kim asked me about that and I said at least until Well #11 starts up they should do the monthly testing, for another year at least, then go back to quarterly or semi-annually.

R.Schmidt Are those done on those 3 wells?

Planton No, it's done on all of them (*monitoring wells*). So there are quite a few.

Bembenek How about dividing the Town into water districts? Do we want to hold off on that?

R.Schmidt That's something I mapped and it's just a possibility (*see the map Ray handed out*). The wells located in those 4 spots. John said this group would have to look at what they wanted for the possibility of water districts. It's mostly for characterizing the groundwater in different areas and the recharge. That I-39 West area and Casimir/Granite Ridge, that area has all of its own recharge and it's mostly wooded so you're getting pretty clean groundwater off that whereas the area in the southeast corner of the Town, almost all your recharge is coming from the Town of Stockton out of those contaminated areas that Patrick said you couldn't find anything decent for water quality. So there are different issues depending upon where you are in the Town. Some of them you can control, and some of them you can't.

Prusak I think that is important for the Town Board to know as they go ahead for approving other things that might be in the Town, like lot sizes, density, CSM's, whatever could be on that lot. If you go back to our subdivision, when we started originally there, it was understood that the County said we were not to improve more than 30% of that lot with solid grass or landscaped area. Keep as much natural as you could and we've been pretty good. Some people you can see, it stands out like a sore thumb, when you go over to a 100% green grass on the lot. Especially when you're sitting on top of sand with a sprinkler system, it's not going to work. But that was one of the things that went in there, not to develop anymore than was necessary to keep the natural areas there as part of the subdivision.

Bembenek Any other thoughts?

Zimmerman My thought is that you need to know what you need to know to form what you want to do here. How many wells do you want sampled? What data do you have now? Once you have that....you can form that. If you need to test in some areas more, then you know where you're deficient so my idea is that you need to know what you are looking for. If you have 50 wells in a district, is that enough or not enough? Is it not widespread enough?

G.Laug Also, how far back would you go back in your data? 15 months is what you were suggesting.

B.Devita No, 15 months is what we're suggesting for testing your well.

R.Schmidt If you test every 15 months, then over a 5 year period, you'd know what your water quality is like throughout the year. The only thing we know is that it will change, it'll go up or down, but it will change.

McGinley I'm thinking in our case, we have the data base of 490 samples in the last 10 years, I don't know how they'll exactly line up. It looks like the majority of your wells are in these districts anyway so it could be that you'd get a fair amount of samples in each one even if it's just the last 10 years. It's not that hard for us to capture samples for let's say nitrates from each one of these for the last 10 years.

Planton The City has to test for an incredible amount of parameters and contaminants. All that information is on the DNR website. Well #11 doesn't exist yet but after it's up and operating, they'll have to test for a number of inorganic compounds every 3 years. They'll do radionuclides every 3 years, they'll do volatile and synthetic chemicals I think every 3 years. It's easy to find on the website, it's public information. At least you could find what Well #11 water quality is. It could be a data point of one location that pumps a lot of water and that's not meant to be something the City can't publish.

Zimmerman Is there something in the published data of the sampling? Like if you were going into anyplace and put down an area and said, "What should we test for in this area?" Whether it is the Town of Hull, Plainfield or South Africa. What would we want to test for? Is there something on the internet that would say this is how you would want to test that area? Basically, some place in America where someone has actually done this?

B.Devita It depends upon where you live, what you want to test for.

R.Schmidt In Portage County, I recommend the homeowners package that the lab runs. Or, there are other commercial labs around that run similar packages. I recommend that as a starting point because off of that, if we find something elevated, we can then look at what else we might want to test for. Target that rather than testing for a bunch of compounds that you're probably not going to find. So that's my initial recommendation plus the diaminochlorotriazine, it's an atrazine metabolite test. It's an indicator, if it shows up at a certain level, you can be pretty sure that your atrazine level is above the health standard. Those are the 2 tests I recommend. One test is \$44 and the other is \$27. Those are the tests I would run initially in the Town of Hull for anyone.

Zimmerman Is this an on-going study or is this a static study? A period of time like from 2009 to 2015? Or, if you detected a big plume of something out in the Town of Stockton that's coming this way, would you test outside the boundary lines of your districts?

R.Schmidt Are you asking us? That's for you to decide.

Zimmerman What I'm saying is, if you test within the Town of the Hull, or one of these 4 districts, you're water is coming from north of here and your water is coming from east of here. So if you find nothing that's really of great significance, would you want to sample once or twice. Or maybe you have something from the County outside those boundaries to give you a

heads up that might say this might be what happens in the next 10 years as the water flows into our district.

R.Schmidt If you find excellent water quality, that's very significant. If you find high levels of contaminants, that's also very significant. That's part of my function with Portage County as Water Quality Specialist, to know what is going on out there and track where it might be coming from and where it might be going to and advise people. So whether the Town of Hull has this as an ongoing project or not, it will be a system of the County and it will be ongoing. That's the way I look at it. I'm very interesting in what comes out of this study.

Zimmerman That's fine. All I'm saying is that again, what do you want and what do you have right now (*for data*).

B.Devita I think that's the first question to be answered. What do we have right now? We have a database at the University of water samples that go back to 1970. So we could assemble data from the past 20 years fairly easily. It's not what we want, but what the committee wants us to do. Do we have a budget to work with? I don't know.

Bembenek You have records back to the 1970's? I took water samples in the Town of Hull in the 1980's. After work, after my regular job, I'd take samples throughout this whole township and I took them in to the DNR building, it used to be Room 211. I took the samples and at that time, I believe, the Town paid for it.

B.Devita Most of our data that we're going to assemble is from private testing from residents.

Bembenek I took samples from people that called me up in different areas of the township. I might have records at home yet, I'll have to check that out. The reason I bring it up is because you said you have records from the 1970's on. I knew it was in the 1980's when I did that.

G.Bablitch Is it possible to pull a report that shows the exceptions? In other words, if wells are testing above the recommended quality levels so we could see areas that may have higher levels of nitrate or higher levels of arsenic or things like that?

McGinley Maybe it would be easier to show them as a percentage in these sort of areas. If it's a percentage more than 10.

G.Bablitch I'd be interested to see that, what areas are quality issues that aren't appearing in others. If the wells test fine or below the standards, our concerns would be with those that are at or above the levels that they should be. Maybe we should look at more monitoring in those and which way the groundwater is flowing and if it could affect neighboring areas. Is that possible to pull that data out?

McGinley Only if it's expressed in a percentage.

G.Bablitch That's fine.

McGinley A percentage of the wells in this area. If you like these kinds of areas (*the districts on Ray's map*), we could do it within those area or expand them if you want. We can try that.

Prusak That's quality, you also have a quantity issue. Ray, how many wells in the Town of Hull that you know about that would qualify as water short? Where your normal recovery of 1 ½ gallons per minute?

R.Schmidt We'd have that on new well construction reports.

Prusak That's an issue, I'm sure there are wells west of the river that don't recover.

R.Schmidt I think you're probably right but that's where the driller will drill deeper and provide the water storage. There are some that are dry, they usually hydrofracture them.

Planton If I was living in the Town of Hull or moving here, I would almost look at this study as very comparable to what we're doing for Well #11 right now. Every new municipal well has to have a wellhead protection plan done for it and we're doing that for Well #11 right now. The first thing we do is a contaminate source inventory. You look for a mile or 2 or a certain radius around the new high capacity well and search the database for old landfills, or any underground storage tanks. They're all in databases. I won't want to move into an area that is downgrade from an old dump or landfill or where someone has leaking underground storage tanks. You have 2,200 wells. That's not much different than a small municipality that might have 2 or 3 or 4 small capacity wells. That should have a well protection plan. You just have that same system scattered throughout the Town of Hull. The first thing I'd want to know from those data bases is where are the old landfills, town dumps that no one knows about. We have a map that shows that because the DNR requires setbacks from cemeteries, storm water ponds, salt storage sheds, underground storage tanks, septic systems, setbacks from everything. You want to know some of that stuff, especially things that can contaminate water in a hurry. Like some farmhouse that has a underground storage tank gas that could be leaking for 50 years.

Bembenek There were at least a half dozen dumps in the Township.

Planton That's common throughout the state.

R.Schmidt We have all that at the County on GIS.

10) ADJOURNMENT.

The next meeting will be August 11, 2011 at 6:30. Meeting adjourned at 9:15 p.m. with a motion made by Phil Gjevre and seconded by Gladys Laug. Motion passed.

Respectfully submitted,

Patty Amman
Task Force Secretary
Town of Hull, Portage County