

POLLUTION CONTROL FINANCING AUTHORITY
OF WARREN COUNTY

MINUTES OF REGULAR MONTHLY MEETING

November 28, 2016

Chairman James Cannon called the regular monthly meeting of the Pollution Control Financing Authority of Warren County to order at approximately 9:30 am.

Authority Members present: James Cannon, Richard Mach, Bud Allen, and Joseph Pryor.

ROLL CALL:	Mr. Allen	- Present
	Mr. Pasquini	- Absent
	Mr. Pryor	- Present
	Mr. Mach	- Present
	Mr. Cannon	- Present

Also present: James Williams, Director of Operations; Brian Tipton, General Counsel; Dan Olshefski, Chief Financial Officer; Jeff Winegar, T&M; Archie Ross, T&M; Jim Peeples, T&M; Jamie Banghart, Recording Secretary.

The Pledge of Allegiance was led by Chairman Cannon.

Mr. Cannon read the following statement: "Adequate notice of this meeting of November 28, 2016 was given in accordance with the Open Public Meetings Act by forwarding a schedule of regular meetings of the Pollution Control Financing Authority of Warren County (PCFAWC) to the Warren County Clerk, the Warren County Board of Chosen Freeholders, the Express Times, and by posting a copy thereof on the bulletin board in the office of the PCFAWC. Formal action may be taken by the PCFAWC at this meeting. Public participation is encouraged".

MINUTES

Mr. Cannon presented (M-1) the regular monthly meeting minutes from October 24, 2016. There is a correction to page 3, paragraph 2 where it states 1.4% and 1.5%. This should be corrected to .14% and .15%.

Mr. Pryor made a motion to approve the Regular Monthly Meeting Minutes from October 24, 2016 as corrected, seconded by **Mr. Allen**.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

Mr. Cannon presented (M-2) the Executive Session minutes from October 24, 2016.

Mr. Pryor made a motion to approve the Executive Session Minutes from October 24, 2016, seconded by **Mr. Allen**.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

Mr. Cannon presented (M-3) the Special Meeting Minutes from November 10, 2016.

Mr. Pryor made a motion to approve the Special Meeting Minutes from November 10, 2016, seconded by **Mr. Allen**.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

Mr. Cannon presented (M-4) the Executive Session Minutes from November 10, 2016

Mr. Pryor made a motion to approve the Executive Session Minutes from November 10, 2016, seconded by **Mr. Allen**.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

CORRESPONDENCE

Mr. Cannon stated that regarding the RBA Group Traffic Study, he has a couple of items that he wants to discuss in Executive Session.

Mr. Williams discussed a letter to White Township regarding host fees. He stated that every year we do a reassessment of the tonnages that came in and we reassess the host community fee. He also stated that in accordance with the agreement, the White Township host community fee will get a slight bump for 2017. This is based on the tonnages and fees that we generated this year. He also stated that this is a standard letter that we do every year to White Township.

Mr. Allen questioned what is it in the agreement that causes the bump? Mr. Williams replied that there is a formula that he believes that is in the agreement. Mr. Olshefski stated that on one of the pages of the financial report, he will explain and go over it in detail when he does his report.

Mr. Pryor questioned if that is by statute, the host community fee? Mr. Olshefski replied it is by statute that we can pay the host fee. Mr. Pryor questioned but the amount is not by statute. Mr. Williams

replied that it is written in the agreement between us and White Township. Mr. Tipton stated that he thinks that it is permitted by statute. Mr. Pryor stated that then it is negotiated. Mr. Tipton stated that he believes so. Mr. Cannon stated that there is not per say a contract. Mr. Williams stated that it is an agreement that comes up every five years for negotiation.

PUBLIC COMMENTS (AGENDA ITEMS ONLY)

None

FINANCE

Mr. Olshefski reported on the October Financial Report. He stated that that our volume on our solid waste is slightly behind to where we were last year through October. But if we look at our cash balances in our budget, he stated that we had a very solid healthy year and we are in excellent shape financially.

Mr. Olshefski stated that the cash balances have grown in both the restricted and the unrestricted.

Mr. Olshefski stated that the restricted is our long term which has grown 3%. This includes the money that we put in. At the last meeting, he mentioned that our five year interest that we received through our restricted is averaging 1.2%. This is basically the money that is in the CD's, Treasury Notes and all of that. He noticed lately that we are getting more into CD's and it will be interesting what happens with the interest rates in the next few years. The U.S. Treasury Notes, the yield has calmed down. We had some money in the U. S Treasury Notes that we were paying approximately 4% but we used to buy them above par and then when they sold them, we took that loss. It all netted out to about the same as a CD.

Mr. Olshefski stated that the unrestricted cash has grown \$1.8 million which is due to the budget activity for the year. He also stated that we had a very healthy budget year.

Mr. Olshefski reported on the accounts receivables. He stated that the thirty one to six days is down to \$116,000.00. He also stated that this fluctuates month to month but that is turning around and we are getting the collection in quite quickly.

Mr. Olshefski stated that our revenues are at nearly \$6.5 million collected for the year. We are 83% of the way through the year. Our operating expenses is at 60%. Overall expenses are at 58%. He stated so it has been a very healthy year.

Mr. Olshefski stated that the leachate, due to the dry year, are down significantly which helps with our cash balances this year.

Mr. Cannon stated that he does not think that he has ever seen a lower number than he saw for Passaic. Is that the actual number for October? Mr. Williams replied with yes. He stated that actually in October, we trucked nothing to Passaic. This was the first time since 2012 which is due to the lack of rainfall. Mr. Cannon stated that there is a positive effect to a drought but only for a few of us. Mr. Williams stated right. He also stated that September was a low number also.

Mr. Olshefski stated that on page 4 of the financial report, we can see how the White Township host fee is calculated. He also stated that the period runs from November 1st through October 30th. He believes that the reason for that, is that we get this letter out to White Township so that they know what they anticipate for their municipal budget as revenue coming in from the Authority. It is based on the disposable revenue and the tons of waste. Then we get an average price per ton and they get a percentage of that. He believes it is a little over 8%. This is how it is arrived at what the host fee will be. It will be \$4.06 compared to \$4.01. He stated that it varies and it has been stable for the last few years in the \$4.00 range.

Mr. Cannon questioned if there is something that White Township does internally or do they just take our numbers? Mr. Olshefski replied that he knows that from a County prospective, we look at what we are going to generate as our anticipated revenues and with this rate varying they can use that as anticipating the same level. They can see that it is 1% higher. He also stated that it varies by the tonnage also. There is a flexibility. Mr. Cannon stated that he is very familiar with the formula. He was wondering if there is someone in White Township that does the same counterpart to ours as to the formula. Mr. Olshefski replied with no and there is no counterpart.

Mr. Olshefski stated that the one thing that he did notice is the credit card use for the month was 48% which was a pleasant surprise. This is the highest month he can recall. He stated that overall for the year is 36.7%. The reason for using more credit cards is that it takes less cash out of the system which is always a good thing. Mr. Pryor stated that we get our money quicker. Mr. Cannon stated that not too long ago we were at 12%. Mr. Williams added 15% and every month it is getting better. Mr. Olshefski stated that it is a steady slow growth.

Mr. Olshefski stated that we did complete the final report for the tire grant. There was a slight under expenditure in that grant and he believes Mr. Williams was doing that report. It will be finalized and sent in.

Mr. Williams stated that we asked the DEP for an extension which he believes we talked about at last month's meeting. He stated that we approached the DEP and requested an extension. A letter was sent to them. He stated that the DEP came back and said that we were not using the funds in accordance with their program, even though we told them exactly what we were going to do with it and they approved it. They have asked for the balance of what was remaining in these funds to be returned to them, which was a little over \$6,000.00.

Mr. Pryor questioned how were we not in accordance with their program? Mr. Williams replied that we told them exactly what we were going to do with it and they had stated that the purpose of the tire grant was for the collection of abandoned tire piles throughout the County. Mr. Pryor questioned as opposed to? Mr. Williams replied to as opposed to people bringing them into the facility. Even though it was all spelled out in the application and they approved it. Mr. Pryor questioned that they did not ask for what we already spent? Mr. Williams replied with no, just what was remaining of the funds.

Mr. Cannon stated that he thinks that the lesson learned is that we need to approve. The interpretation that we are all learning lately with the DEP is that he thinks that we need to look at anything before we send something out to the DEP. He also stated because reading the correspondence, he does not want to say it was ambivalent but maybe we could have tailored it more to keep ourselves in a "better light" because of their interpretation of things down there.

Mr. Olshefski agrees and he works with grants all of the time. He was taken back by the State on this grant because the application, as Mr. Williams stated, submitted was approved and there was a spending plan attached to it and this is how we spent the fund. Then they come back and say that is not the way they really intended it done but they approved the application.

Mr. Cannon questioned the Board if they had any questions on any bills? He sees that we reversed the charges with the contracts as far as late charges. He stated that he knows that Mr. Williams was going to put something together that we are going to include a letter with the new contracts so that we clearly illustrate that whether we pursue that going forward. He also stated that we will decide that case by case basis but so that everyone knows that those late charges were reversed.

Mr. Cannon presented the Resolution to Pay the Bills (R-11-02-16)

On a motion by **Mr. Allen**, seconded by **Mr. Pryor**, the following resolution was adopted by the Pollution Control Financing Authority of Warren County at a meeting held on *November 28th, 2016*.

R E S O L U T I O N
R-11-02-16
To Pay Bills – November 28, 2016

WHEREAS, the Pollution Control Financing Authority of Warren County has been presented with invoices for services, supplies and other materials rendered to it or on its behalf;

NOW, THEREFORE, be it resolved by the Pollution Control Financing Authority of Warren County that the following bills be paid:

See Attached

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

We hereby certify Resolution to Pay Bills in the amount of **\$368,539.57** to be a true copy of a resolution adopted by the Pollution Control Financing Authority of Warren County on the 28th day of *November, 2016*.

Jamie Banghart, Recording Secretary
James Williams, Director of Operations

PERSONNEL

Mr. Cannon questioned that with the personnel, do we want to move that to Executive Session? Mr. Williams replied with we move that to later for Executive Session.

PRESENTATIONS

Mr. Williams introduced T&M Associates for their presentation.

Mr. Williams asked them to state their names for the record. Mr. Jeff Winegar stated his name, Mr. Jim Peeples, and Mr. Archie Ross all from T&M Associates. Mr. Winegar stated that this morning they will be giving us an update on their progress on the project and as we requested the differences between the original handout and the one that we have in our possession now. He turned their presentation over to Mr. Peeples.

Mr. Peeples stated the differences between the handout that we had and the one that we have right now are primarily just refinements. He stated that he thinks that they added in some additional data that were not in the plots and brought them more up to date. He also stated that they adjusted the cost analysis based on some discussions with Mr. Williams. One of the things that it is difficult to easily quantify is how much well water is being mixed in with the leachate when it goes through the pretreatment system. He stated that so in discussions back and forth with Mr. Williams, they refined that a little bit better and he changed the numbers which changed the cost analysis.

Mr. Cannon questioned are all the charts just updated with some additional tests? Mr. Peeples replied with yes and a little bit of formatting. Mr. Cannon stated that the numbers are really where the crux of the changes came in. Mr. Peeples added yes and mostly the cost numbers.

Mr. Cannon questioned if any members had any questions on the homework that we received beyond the revised one?

Mr. Pryor stated that he did and he will go right to the cost analysis which he thinks that those two pages, to him, tell 90% of the story. He stated that he sees what they did on determining the cost per gallon treated. Mr. Pryor stated that he is discussing the Pretreatment System Cost Analysis page. He stated that just the labor cost of sixteen hours at \$25.00, is that Hatch Mott's actual cost or did we just pick it? Mr. Williams replied with that is our staff's actual cost. Mr. Pryor questioned what about Hatch Mott? Mr. Williams replied with that is not in here. This is our staff. Mr. Pryor stated that it is even higher, correct? Mr. Peeples stated that he does not have numbers for outside consulting. Mr. Pryor stated that we know what their contract is, right? Mr. Williams replied with yes. Mr. Pryor stated that maybe we can look at that because he thinks that it is going to push the number even higher. Mr. Peeples stated that there are other things that he could not quantify very easily and probably not large costs but ones that were not easy to put in there. Hatch Mott would be one.

Mr. Pryor stated that when he came on the Board and he looked right at the dilution. He circled that as problematic. Then this, he stated that he has never seen it quantified before but he had a suspicion that it was going to be cheaper to us to send it to Passaic Valley then everything that we go through here. He also stated that within an order of magnitude, he guesses these numbers are reasonable.

Mr. Peeples stated that is a fair statement. He thinks that there are probably some things that can be tweaked without really spending much money that could be made to the current system to try and bring

it more in line with that cost. Hopefully, we bring it below that cost even in a short term. That is what the short term goal would be. He also stated that the long term is to put in systems that will get it much lower.

Mr. Pryor stated that he would ask that they just see if we could figure out what the Hatch Mott cost was. We pay them so much a month and that is going to make that treatment cost number even higher.

Mr. Pryor stated that obviously the dilution water is a target. He also stated that the Micro C1000 is our carbon source for the nitrogen removal and that is not really a parameter that we are required to remove.

With no other questions, we moved on to the power point presentation.

Mr. Peeples presented the outline of what he is going to go over is basically looking first at the raw leachate. He stated that right now the pretreatment system only treats a portion of that raw leachate. These plots and the discussions here will talk about the whole amount that is coming in because that is really what we want to be able to deal with in the long haul. Then, some discussions of the existing pretreatment system, both in terms of cost and just its general methods and procedure. Cost evaluation for that with some discussion and thought toward the long term efforts to reduce costs for the overall leachate handling at the site. Then, he stated that the last of that is just the path forward from where we are at right now to where we want to get.

Mr. Mach stated that while he is on that slide, could Mr. Peeples go through what the acronyms stand for? Mr. Peeples replied with COD is chemical oxygen demand in leachate that tends to be relatively high relative to the next term which is BOD. BOD is biological oxygen demand. He stated that both of those are relating to how much organic matter, for the most part. It is related to organic matter that is in the leachate. It just kind of indicates how strong the leachate is and in terms of leftover organic matter in there. The COD, a lot of that is not biologically degradable, even though it is organic matter. BOD tends to be all degradable in the treatment system. So we will get some of the COD out and pretty much all of the BOD will come out. TSS is total suspended solids. That is just suspended matter that is in the leachate stuff that is not dissolved within the leachate. NH4 is nitrogen. He stated that can also be written as NH3 nitrogen. That is just the ammonia that is in the leachate. Leachate tends to have relatively high amounts of ammonia. This is an important parameter for pretreatment to go to the Oxford Waste Water Treatment Plant.

Mr. Cannon questioned that NH3 and NH4 are the same? Mr. Peeples replied with NH4 is the ionic form of it so it is in solution. NH3 is a gas which is dissolved in solution. He stated that they treat them the same. They are essentially the same in terms of what is in the leachate.

Mr. Peeples stated that TDS is total dissolved solids. This is the key of our long term process here of trying to get that parameter down so that we could get more of the leachate to the Oxford treatment plant and haul less of it.

Mr. Peeples presented the first slide. He stated that we are looking at flow rates. The orange line at the top is the discharge limit for Oxford Waste Water Treatment Plant. That is the daily limit that we do not want to go over typically. There is a monthly limit at 60,000 so we can occasionally exceed that 50,000 and be ok as long as our monthly average is below the 50,000. He also stated that the upper green line is our total leachate flow rate for the landfill. It combines both of what we are hauling offsite and what we are treating. He also stated that the blue line on the bottom is the treatment. Mr. Peeples stated that we

can see the difference between those two. Roughly right now, we are treating about a third of the leachate and about two thirds of it being hauled off for disposal.

Mr. Peeples stated that a couple of other interesting things of this is that typically we are not exceeding. This is a four year period so during that four year period there is only a few times when the total leachate flow rate exceeded on a daily basis, the discharge limits for Oxford Waste Water Treatment Plant and that would probably be expected to continue into the future. He also stated that some of those daily ones are not going to be an issue as long as the monthly is under 60,000. It looks like, in terms of the amount of leachate we are generating, if everything were put in place to be able to fully pretreat it and get it to Oxford, then we would be ok in terms of flow. The other interesting part of this is where this drop off that we see in the last couple of years. He also stated that as we indicated earlier in the meeting, that is likely due to drought conditions and low rainfall. If that is the case, then it is not likely to continue into the future and we may see it come back up into the range that it was in 2013 and 2014.

Mr. Peeples stated that looking at COD concentration of the leachate, there are two plots here (pointing to the power point). The right-hand side is just the concentration itself. This is over a seven year period basically from start up until now. We can see there is quite a bit of scatter in the data. COD tends to vary quite a bit within the leachate but the important thing there is the line through the middle. That is linear regression line. That is our best fit line for that data set. The dash line is essentially flat. So our COD concentration is not changing over time. It is pretty stable and they would expect it to remain stable into the future. He stated that what that means then is on the left-hand side we have the loading rate which is the loading of COD that would be going to the Oxford POTW if we get everything going there at some point. We can see that we are generally underneath the line at the top which is the discharge limit 1750 pounds per day. That is the limit on COD and very rarely are we above that limit in terms of the amount of COD and this is untreated. This is the raw leachate coming to the system. Any kind of treatment system that is in place, the current one or any envision for future one would drop that COD concentration. The bottom line of that is that there is no real issue with COD. We do not have to design anything into this to remove COD from the leachate. It is good as it is. We see a downward trend in that but that is mostly just due to the fact that we have less leachate over the last couple of years. That could come right back up but he thinks that we are still not going to have any issues as far as COD mass or concentration.

Mr. Pryor questioned where is that limit? Is that in our contract? Mr. Peeples replied that it is in the NJPDES (New Jersey Pollutant Discharge Elimination System) Permit and is also in the contract with the Authority. Mr. Pryor stated that so with some of these we go back to their limits and then we work backwards and derive these for us so that the others are right in their contract. Mr. Peeples stated that this is an interesting point. The TDS limit is not actually in the NJPDES Permit. There is no limit in there for TDS so that is a negotiated thing with the Oxford POTW. He also stated that nitrate appears not be in neither but there is a pending limit on nitrate. Mr. Cannon stated which is more based on what they are allowed on their permits as opposed to? Mr. Peeples stated that one is. TDS, in particular, because they have a limit on how much they can put into the river and that comes back then to the landfill.

Mr. Peeples stated that for the most part for what he is going by is what is in the permit. Mr. Pryor questioned on whose permit? Mr. Peeples replied with the Authority's permit. He stated that most of those will be that way but he will try to point that out as we go through. Mr. Cannon stated that everything else is negotiable, theoretically. Mr. Peeples replied with correct and even the TDS would be negotiable, he would think.

Mr. Peeples presented the BOD concentration. This one is particularly important as we discussed early on here. The right hand side is the concentration for the last seven years. We can see with the best fit line, the dash line, we have a clear declining trend in the BOD concentration. He also stated that really if we look from January 2013 on, we can see BOD concentration almost always is pretty low in this leachate. That is what is kind of turned into a problem here in terms of having to use some other kind of food source for the denitrification. We will get to that later. Mr. Peeples stated that then on the loading, this is the one that is important for discharge to Oxford. Typically, we are below the limits for BOD without any pretreatment. Any kind of pretreatment envision for this system or the current or any other is going to reduce BOD to some extent. Again, he stated that BOD is not a parameter that is going to be an issue with discharge to the Oxford POTW. The decline here in mass loading over time is going to be a combination of both of our decline and flow rate and the overall decline in BOD concentration. This one could be real and that one could continue into the future. We can see that BOD continue to decline over time.

Mr. Peeples presented the TSS, the total suspended solids. He stated that again we have the concentration plot on the right hand side. There are lots of variability in that but generally speaking, we have a flat trend. We would expect to see a flat trend on that going into the future. On the left hand side, most cases the influent raw leachate would meet the TSS mass loading standards for Oxford without any pretreatment. He stated that now the fact of the matter is, again, pretty much any pretreatment that we would envision would almost virtually remove any suspended solids. It is not really an issue. He also stated that it is not going to be an issue even with the raw leachate but it will not be an issue with the treated leachate.

Mr. Cannon stated that going back on that one, he sees those trend lines are dead straight. Is that to be expected that we would maintain? He also sees the load side seems to be approaching that PRMUA's permit. He is assuming. Right? Mr. Peeples stated that right so are we talking about the load being kind of close to the limit. If we did not do any pretreatment what so ever, we would have some concern because some of these points do go above and it is pretty close to the line, but virtually any kind of treatment system, the one that is in place right now or just about anything that they could envision for treating this would drop that TSS load down. Mr. Cannon stated so it is already being brought down by the treatment we are doing and we are saying that it could be done a lot more, ok. Mr. Peeples stated that overall that is unlikely to be an issue even though the raw leachate is a minor issue even just coming right out of the gate.

Mr. Peeples presented the next slide on the power point. He stated that this one is one of the real important ones here which is ammonia loading. The plot on the right hand side is looking at concentration and how that concentration changes over time. We have a seven year time period here. It does look like we have a slight increase in the concentration over time from ammonia. We do not know exactly how real that is or how long that will continue. With the type of waste that we are excepting there, the ash waste, their expectation is that this ammonia concentration should level off and probably decline over time but there is really no way to predict that until we go into the future. He thinks that we just have to count on at least a steady or somewhat increasing ammonia concentration in the leachate. He also stated that orange lines are the discharge lines for Oxford WWTP. They have both the concentration limit and a loading limit for ammonia. Both of them are quite low so this leachate is nowhere near those loading limits or the concentration limits. This is really the key parameter that the leachate treatment system was designed to take care of to get the ammonia out and get it down to a low enough concentration that we could go to Oxford. He also stated that recently it is a big task here and we have a lot of ammonia. Just like any leachate, we are going to have a lot of ammonia.

Mr. Cannon stated that the ammonia has a seven year trend upwards right now. Mr. Peeples agreed. It is trending upward. He stated that it is a slight trend though and really to be honest, he thinks that this will probably level off just because of the type of waste stream that we are taking. He does not expect that to be a big problem end but it is something. Overall, ammonia is a problem. Ammonia is one of the most important parameters that we need to treat with this treatment system. He also stated that it is the same from the loading standpoint, we are way above the loading limits for ammonia. He stated that one way or another, ammonia concentration has to come down. The current treatment system does a good job with that but, as we will talk about as we are going forward, it does it at quite an expense.

Mr. Williams questioned Mr. Peeples, could the lack of rainfall cause that to concentrate to make the ammonia continue to rise? Mr. Peeples replied with it could. He stated that could happen with any parameter, but in particular, he thinks that ammonia is a good example of one that would concentrate as we have less influx of surface water making its way through the landfill. He also stated that could be a reason for this. We would not expect ammonia to be going up with the type of waste that we are taking in.

Mr. Allen stated that with the two charts, the one on the left is pounds per day mass load and that is treated plus hauling? He also stated that it does not appear to be a correlation between the right side and the left side. He would think that there would be. Mr. Peeples stated that what is probably happening here, in terms of first off the line when we do a running average, it could sometimes make dots that are all over the place. They start to appear that they have some kind of pattern. This is just an average line on the left hand side. He also stated that more to your point, the one on the left is a combination of both concentration and flow because we have flow that has been going down over the last couple of years. The trend line on this one (pointing to the charts) is more likely to be a lot flatter than here (pointing to charts) where we see an increasing trend that could be offset by a decreasing flow rate and we have more of a flat overall. He stated that it is the same data but there is more data in this plot than in that one. Part of it is just where we have both flow and concentration data that we can use to make the loading. This one has a few more data points to it.

Mr. Cannon stated that just to follow up on Mr. Williams' question regarding the ammonia issue, if we went into a more normal rainfall pattern, we may loss the ammonia concentrate more but then we just increase our monies in pumping or hauling. Mr. Peeples stated right and to increase our volume. There is a downside to rainfall. As we said, lack of rainfall or drought condition does save us money.

Mr. Peeples stated that the last parameter here is the TDS, total dissolved solids. This is the one that started that whole process of looking here because there is a pretty low limit for TDS that can go to the Oxford POTW. If we look on the right hand side, again, this is concentration. These dots are all TDS concentration. He would say that it is a pretty strong trend and one that he would expect to see continue in the future. He also stated that in January 2010, we were maybe about 13,000 milligrams per liter on TDS and at the end of this plot, we are in the 22,000 range. His expectation is that will continue to go up. There is an issue with the lack of rain that we would have higher TDS just like ammonia that can concentrate. But just that long term seven year trend, he guesses that is going to continue and that is a big issue because we have to try to meet that 3,500 line. He stated that virtually all the data, virtually all of our mass loading daily is above that line and above it by a significant amount. Sometimes we are up 10,000 pounds per day and we have to get down to 3,500 pounds per day. That is our big challenge. Ammonia is a much more manageable challenge than TDS. Obviously, that is the focus of the whole study.

Mr. Peeples stated that to look in TDS in greater detail, we had some additional data collected over the summer so that we could look at some parameters that are not collected on a regular basis. Some of those are listed here but this is a breakdown of those four data sets of what our TDS was. On the left hand side ranging from 22,000 to 32,000 about in a range that we would expect based on the long term history. Then these are the components that would make up that TDS. The reason that COD is in red (on the right hand side) is that when we measure TDS, we lose some of the components that are in the mix. Some of the COD would be lost during the measurement process for TDS. The percentages there are probably are not what we would see in the actual TDS measurement. The rest of these would not be lost during measurement of TDS.

Mr. Peeples stated that a couple of important things here and the parameters that we are most interested in removing from a standpoint of treatment, are calcium and magnesium. Those are hardness parameters. The leachate comes in with very high hardness and that leads to the potential for scaling anywhere with the system, but in particular with our membrane system. He stated so with the ultra-filtration system that is there right now, and then pretty much any method that we would use to reduce TDS and allow more of the leachate to go to the Oxford WWTP, those would also be membrane processes like reverse osmosis. He also stated that having that hardness is going to be an issue as we go into those membrane processes. One of the things that we talked about right from the beginning on this project, was removing those. Using a lime soda softening process upfront would get rid of the calcium and magnesium and also gets rid of the HCO₃, which is bicarbonate or alkalinity. Those would be dropped out of solution in a lime soda softening process. The fluid that is going forward is much more treatable in terms of reverse osmosis are pretty much any method that we are going to use going forward from there.

Mr. Peeples stated that one of the key things to point out here is that the biggest component of our TDS, overall, is sodium chloride. The first two columns are sodium and chloride (salt, sea water). Our concentration of that is quite high in the leachate. On a mass basis it is about two thirds of the overall. He stated that whatever we look at for TDS removal, we have to take that into account and it is something that either has to go back into the landfill or be dealt with in other ways. It is a big component of what will make up that final TDS number that we need to get under that 3,500.

Mr. Williams questioned Mr. Peeples, we do not know that percentage yet, right? Of what that waste product would be from the treatment? Mr. Peeples responded that there are various ways in which that could be handled but it does not necessarily have to go back to the landfill. He also replied with no, we do not know what the volume or the concentration of that would be that would go back to the landfill. Or with anything would go back to the landfill. There are several alternatives that they are looking at that some of which would not have it go back to the landfill.

Mr. Peeples presented the current management strategy. He also stated that down in the lower left hand corner, we have the 36,000 gallons per day of leachate. He also stated that this is based on the last two years so that may be a low number if we are looking at drought years. That number could come back up to that 50,000 range that we saw in the past. He also stated that right now that splits out about a third of it going into the pretreatment system and about two thirds of it being hauled to PVSC. The portion of it that goes into the treatment system, we have the well water component. This is not necessarily where it goes into the system right before the anoxic tank but just from a mass balance standpoint that is where we are putting it. The middle part right there (pointing to the power point) is the key of our overall treatment system right now which is the aerobic treatment nitrification. As he indicated before, the ammonia is much higher than what we need to go to Oxford WWTP so that aerobic process is geared almost entirely to ammonia removal. He stated that we have a biological process, we have microbes that

convert that ammonia into nitrates. Once it is converted to nitrate, it should be fine to go to the POTW and meet their limits as long as our ammonia concentration are low enough.

Mr. Peeples stated that this could be the key to the treatment process. He also stated of course it goes hand and hand with the ultra-filtration system because the nature of that biological process is that we have to return the solid wastes back to the biological tank and keep a high concentration of solids in there for a membrane bioreactor system so that ultra-filtration, those two kind of tie together in what we have right now. Those two components could be enough alone to do what we need to get to Oxford POTW but the problem comes in really with the fact that when we do nitrification, it is a process that produces acid. Our leachate is very low in alkalinity compared to pretty much any other leachate that he has looked at when we compare it with the amount of ammonia versus the amount of alkalinity. This probably has to do with the waste stream and probably has to do with the fact that this is incinerator waste.

Mr. Cannon asked Mr. Peeples to state again what he just said about the nitrification as far as the acid a little bit slower this time. Mr. Peeples stated that when we carry out nitrification that is basically an acid generation process or an alkalinity, it uses alkalinity. It requires some sort of a base to offset that acid generation of nitrification. This is a biological process but it is generating acid. We have to balance that out. It is balanced out initially by what is in our leachate by the alkalinity that is there in the leachate, the natural alkalinity. Mr. Cannon questioned is it the existing alkalinity? Mr. Peeples replied that what is different from our leachate in comparison to a lot of other leachates is that our levels of alkalinity is low in comparison to the amount of ammonia nitrogen that we have in the system. Mr. Cannon questioned if it was higher? Mr. Peeples replied that if it was higher than it would be easier to do nitrification without adding anything in.

Mr. Peeples stated that we have a couple of options. One is to just add base to the aerobic treatment tank. We can do that in a form of lime or we can do it as caustic which is what we are doing right now. This would balance that acid generation of the nitrification process. He stated that this is expensive. The caustic that we are using right now is kind of expensive if we look at it in terms of only doing that to add the base it would be quite expensive. That is something that we have to cautious about. In the original design for this treatment system, the idea was to add this denitrification step, he believes and he was not involved in that design. He also stated that what the denitrification step, the first one in line here, does for us is bring back some of that alkalinity. When the alkalinity is being consumed in the nitrification process, the denitrification process is kind of a reverse of that and it will regenerate that alkalinity and we do not have to add as much caustic overall. It was a really good idea when the system was designed and put in place because we had enough BOD or we had more BOD in the leachate. We had a food source coming in there that could carry out that denitrification process. Those microbes need food to do it. Over time we have seen that BOD level has gone down and they lack the food that they need to carry out the denitrification. So what we are doing right now to take care of that is we are adding a lot of food, the Micro C100. The Micro C1000 is a big cost and it is being added in that anoxic tank to carry out denitrification.

Mr. Cannon questioned Mr. Peeples if this is a trend? Mr. Peeples replied with yes and he does not think that we are going to see much increase in BOD. He thinks that we are going to continue decreasing BOD. If we are going to continue that the way that it is set up right now then we are going to have at least as much food addition as we have or more.

Mr. Peeples stated that he thinks that those are the key components of this flow diagram. The last thing in here is the biosolids. That is going to happen anytime that we have biological process. A certain

amount of the solids continue to generate and a certain amount have to be wasted and hauled away. He stated that right now this is being hauled away to PVSC. Then our overall flow to Oxford is kind of the net of all those inputs. We have about 25,000 gallons per day on average over the last couple of years going to Oxford.

Mr. Pryor stated that before Mr. Peeples leaves the flow chart, he had a combination of questions and comments. He has not seen data on it but it was explained to him that the addition of the well water was the reason. If the TDS concentration exceeded 20,000 or so, then it adversely affected the biological process. Mr. Peeples stated yes that is a possibility and that is something that we really want to look at. He also stated that it is a possibility that the biological process is being inhibited by the high TDS as we get up to these higher and higher levels where it might not have been originally. Then another possibility is that the UF system (ultra-filtration) is having some problems. He also stated that we have a membrane system there that can be affected by the calcium and magnesium that is in our leachate if that is not taken out.

Mr. Peeples stated that those are the two things that he would want to look at right away to see how we could get rid of the well water. We would really like to get rid of the well water. Can we do it from the aerobic treatment standpoint? Can we do it from the ultra-filtration standpoint? The ultra-filtration system does not seem to be greatly challenged right now. He thinks that we could get more through it. They need to look at that. They do not have enough information and they need to collect a little more data onsite to be able to evaluate that closely. If it is the bottle neck, he thinks there are some real options there. If the aerobic treatment part of it is the bottle neck, he thinks that we need to look at that little more closely to how much air are we putting into the tank just the overall processes that are going on in that nitrification tank.

Mr. Pryor stated that the other aspect of this is the biosolids. It has been suggested that if we dewatered, then we could save some money there. He also stated that the size of the waste stream does not seem that excessive but we could put the solids some place and we would still have a waste stream that we would have to deal with. He also added that the waste stream could go to PVSC. Mr. Peeples stated that it would come back through and it would go back through ultimately to Oxford WWTP. He thinks that we have to look at everything because right now the costs are high on that system. He also stated that for the long term, we want to look at each one of those aspects of that biosolids, even though it is not a big number it will become a big number as we are trying to push down the cents per gallon. Mr. Pryor questioned so that will be part of your examinations? Mr. Peeples replied with that they will definitely be looking at trying to get those biosolids back into the landfill. There is no good reason not to do it. If we can dewater them and combining them with the lime soda softening process. They think that they will be able to dewater them.

Mr. Peeples presented the positives of the treatment system we have now and there are lots of positives. It runs very well. He stated that the ammonia to nitrate is almost complete and very good nitrification. The BOD removal, even though we do not have to do it, is complete. The TSS removal is complete and we do not necessarily have to do it. He also stated that we have reduction in COD that is pretty significant and not really all that necessary again. It is a well operated treatment system that is working right. Our denitrification process is removing most of that nitrate so things are working in the treatment system. It just comes down to the negatives which is costing too much to do it. The first negative is that it does not reduce TDS. We know that and it was not designed to reduce TDS. He also stated that ultimately whether it is a component of a bigger system or different system, whether portions of it are reused in the final system, we do have to reduce that TDS. That is the key component to being able to

not haul leachate away, which he thinks is a big part of this lowest cost alternative. He stated that what they do see in the current treatment system is that we have a small increase in TDS.

Mr. Mach questioned what causes that? Mr. Peeples stated that there are a couple of things that would cause this. One would be caustic has to be added to it in order to balance out that acid generation in the nitrification process. So the caustic has sodium in it. Sodium hydroxide is caustic. That is a little bit of TDS being added in. As we convert to nitrate from ammonia, he stated that the nitrate is all going to be measured as TDS. Ammonia is not necessarily all measured as TDS. When you do a TDS analysis, you are heating it up to 105 degrees for twenty four hours and taking weight difference between the two. A lot of the ammonia escapes during that process. He stated that this would also be a component of why we would have a higher TDS in the treated leachate. He does not think that there is anything wrong there it is just a natural thing of that treatment process. He thinks that it is pretty small and a little bit hard to quantify because of that influent flow meter issue. There is some uncertainty there. Then, of course we are just treating one third of the leachate and hauling two thirds of it away. He also stated that the final treatment system has to be a lot less expensive on a per gallon basis and has to take, hopefully, all of the leachate and not have to haul much away to get to that lowest cost alternative.

Mr. Peeples presented the cost analysis. The big thing here is the dollar amount difference between hauling and what we are doing right now. We know that there is some uncertainty in this number at the bottom and we know that has changed a little bit even from our first version of this. As we get more data, and kind of hone in on some of the key pieces that we are missing, they will be able to get that number better. More than that, he stated that they have got to chisel that number down. We want that number obviously to be below the hauling number.

Mr. Peeples stated that one alternative is to haul it all right now and not do the treatment system at all but he thinks that there are some negatives there. He would expect that the components of that treatment system, a good bit of that, would be reused in any kind of final solution that we have here. He also stated that if we just moth ball it, then there is a good chance that we are going to lose the effectiveness of some of that equipment. The UF equipment in particular, if we just let it sit, we will probably have to replace the membranes when we get to the point where we are going to start back up. Instead of just "moth balling" it and going to all hauling, he thinks that the right thing to do is to get the costs down. It also gives us the opportunity to look more closely at each of the components there and see how they are going to fit into the final solution and how to make them cost effective in the final solution.

Mr. Peeples stated that just going through the key things here, the first is discharge to Oxford by agreement. It is \$.022 per gallon. He has to say right out of the gate that is a high cost for discharge. He does not know if there is any room for negotiation in there. It is not uncommon for them to see a half of a cent per gallon or less for a direct pipe discharge to a POTW. The smaller the waste water treatment plant, the higher that number tends to be. He guesses that it is probably a relatively small waste water treatment plant in the overall scope of things but to him, it is a high number. He also stated that dilution water when you have to pay for it and because we are sending it to Oxford. That is expensive. We are not hauling that away but it may increase the volume that we have to haul away. Well water is cheap but sending that well water to a POTW is not cheap.

Mr. Cannon stated that just in theory, to illustrate that more clearly, if you take that dilution well water in addition to what we are sending, theoretically we are doubling our price on what we are sending to PRMUA. Mr. Peeples stated that we are doubling the actual disposal costs not doubling our overall. That is correct.

Mr. Peeples stated that the biosolids disposal as we indicated before, it is a component. It is .6 cents per gallon does not seem like it is that much but when we are trying to chisel that number down to a really small number, it is. If we can take those back to the landfill, then absolutely we should.

Mr. Peeples stated that the Micro C1000 is a really big cost. It is a cost that was not there when the system was put in or at least not at that level. There was more BOD in the leachate and we did not have to use as much. We are using quite a bit right now. It is almost \$3.07 per gallon a food source for denitrification and is a lot of money. Mr. Cannon added which is going up. Mr. Peeples stated it could be going up, yes.

Mr. Peeples stated that the caustic use is kind of going to come in no matter what. No matter how good your nitrification process, there is probably going to be some caustic that we will have to add in. He also stated that it is not a huge cost of the overall but significant when we are going through this biological nitrification process.

Mr. Peeples stated that he thinks that there is some room to work with the electricity. We may be over aerating the treatment plant tank. We might be able to reduce to a smaller size blower. In the long run, if that component is retained, but even in the short term, there may be some energy savings that could be done without spending too much money.

Mr. Peeples stated that the labor costs are a really small component of the overall thing. It is the smallest in the whole list here. He thinks that is going to be there with any type of treatment system. We have to have operators and it has to be well run.

Mr. Peeples stated that overall, we are looking at about 2.7 cents per gallon with this estimate. More between hauling and treatment. This has to balance out better. It is costing quite a bit per year to just treat.

Mr. Peeples stated that these are the areas that they want to attack in that. The dilution water, as much as possible, we would like to get it out completely, if we can. They understand that there is a reason for it being there so we do not just take it away. We have to figure out why it is there, what we have to do to try to eliminate it as much as possible. Hopefully, down to zero. He also stated that the biosolids is always going to be there. Micro C1000, he would like to see is that we stop nitrifying. It is a tradeoff. He stated that taking away denitrification versus adding caustic on our nitrification step. It is an expensive component. In the long haul, it seems to be not a good thing to be doing. They would like to get that cost out. He stated that the one in green there (pointed to the power point) that comes up because if we take denitrification out then we are going to have to add more caustic in. The balance is better. We are saving about a penny a gallon switching around to that direction. He also thinks that we could still use that little bit of BOD that is there. We will still continue the denitrification process. It is just not going to be anywhere near as effective as it is with this food source so that caustic use may not be quite as high as he has estimated there. He would like to get the electric use down. He stated that all of these things are things that we are not talking about adding new equipment. We are not talking about putting a lot of money to the system. We are just talking about tweaks/changes to try to get this number down. The bottom line number here is to be the target of being about a penny a gallon less than hauling, to keep that system running, and keep the equipment in good shape so that it can be used in the final process.

Mr. Peeples stated that the long term goals is no question what we are trying to do is minimize the long term leachate disposal costs. He thinks that there is a lot of room there to do it and he thinks that there are some good ways to do it. They came in talking right from the start with the lime soda softening

process. He thinks that this is a key component going forward to get that in there to remove the hardness from the water. We want to make the water more easily treated by ultra-filtration and by reverse osmosis. In the end, we could get all the water or as much as possible over to Oxford. He stated that the physiochemical process is in here. If we do the lime soda softening step, then what happens in that step is that we add lime into the leachate and our pH goes up significantly. We have a high pH situation in the leachate and that puts us in a good position to remove the ammonia physio chemically. Basically, stripping the ammonia out of the leachate, not having to go to the biological process at all. He also stated that to get as much as possible of that ammonia out and then any nitrification, anything that has to be done biologically, if anything, is going to be a lot more cost effective.

Mr. Peeples stated that we are already kind of set up for that when we do the lime soda softening process. We have the high pH and we are in a good position to take ammonia out physically and not have to do it biologically. That is going to be a key component of cost savings. He also stated that removing the “bad actors” which is the calcium, magnesium, and humic acids. One of the things that the lime soda softening process has been shown to do with other leachates, and we need to show that here as well, is to take out humic acids. Humic acids tend to be problematic compounds for reverse osmosis so for membrane systems. They are foulants for membrane systems just like calcium and magnesium are scaling components. Humic acids tend to foul the membranes and cause poor performance, more frequent cleaning, and more labor costs. This is another advantage of the lime soda softening process.

Mr. Peeples stated that the existing equipment is in good shape. The UF system seems to be in good shape so they would want to, as much as possible, keep that equipment operational. Keep it as a part of the overall final solution on leachate. This is his goal of 3.5 cents per gallon. He does not think that it is unrealistic. They have run some numbers on some of these other processes and how much it would cost for chemicals and other components for those processes. That would be the goal to get down to the 3.5 cents per gallon and from where we are at right now it is about a \$800,000.00 per year savings on leachate treatment. He also stated that is at 36,000 gallons per year and if we are up to 50,000, that number is bigger.

Mr. Williams questioned Mr. Peeples if he said increasing the pH would automatically reduce the ammonia levels and cause that? Mr. Peeples replied that it would set you up to do it. He stated that ammonia in the leachate exists as NH4 so it is an ion and at low pH it is going to exist as strictly NH4 and that will not come out a solution. It is just like sodium and chloride and it's an ion and will stay in there. As the pH goes up higher and higher, a greater portion of that converts to NH3 to ammonia gas. It is dissolved still because a lot of the ammonia gas can dissolve in fluid but it is ammonia gas. If we are up at a pH of 11, which is where we might be on the lime soda softening process, that ammonia is almost all in the form of NH3, ammonia gas and it is ready to come out. It just needs physical process to pull it out. The air stripping is one of those processes. There are several processes that can be used to get the ammonia out and to get it out in quantity, almost completely at those kind of pH. That is what we would be looking to do before we go back to any other processes.

Mr. Allen questioned how is the gas emitted? Mr. Peeples replied that is an important point also. He stated that with the air stripping process, we are going to have ammonia in an air stream. Now, there is a few things that we can do with that. We could just discharge it to the atmosphere but it has an odor and there are odor complaints. Landfills always have odor complaints so that would be an unlikely thing that we would do here. He also stated that the air could be used as the air source for our flare and the ammonia could be burnt off in the flare. So, the air stripping that has ammonia put into it becomes the air that is used to fuel the flare that is flaring off gas right now. He also stated that our gas to power system has been taken offsite. We have a flare that is running all of that gas now and burning it off.

Essentially, the ammonia would burn off in the flare and we would have no odor issues associated with this. This is an inexpensive, pretty straight forward process to do this. He also stated that we could also recover that ammonia and we will look at that. There is a value to ammonia. It is a fertilizer. If we could offset the cost of recovering it with the cost of selling it, then maybe even make a little bit in that process, that might be a way to go. We will look at it and look at the economics of all three. He likes to recover ammonia and he likes to see it reused but if it ends up being more expensive then flaring it off then it may not be the way to go.

Mr. Cannon questioned Mr. Williams, has our gas flow number consistently been going down? Mr. Williams replied it is slowly on a decline. Eventually, it will bottom out to a certain point. Our gas curve is something that we will need to take a look at in the near future.

Mr. Peeples stated that there is still plenty there to take on this air and to destroy the ammonia. Right now, he thinks that we are somewhere around 500 cfm and on the downside of that but from initial calculations there is plenty there to get rid of the ammonia.

Mr. Pryor stated that Mr. Peeples has not really mentioned our expansion. We are looking long term and we do have an expansion ongoing. We have been waiting for a leachate model for a while. It is supposed to be here momentarily. He also stated so long term, leachate will tend to go back up and gas production should go back up. Whatever we propose long term, he stated that it will have to be set up in a way that we could expand it when the time comes. Mr. Peeples stated that is a really important thing to design it at this point and time to make sure that we do not put something in that five years is antiquated because it is not big enough or does not have the ability to be expanded.

Mr. Peeples stated that 36,000 may be our low number for a long time. He does not know with the drought conditions.

Mr. Mach questioned if there was anything that we could do with respect to changing the composition of the materials that we take into the landfill to change this whole picture? Mr. Peeples replied with he thinks that one of the things that clearly is driving the increase in the TDS is that we are bringing in a large fraction of our waste is incinerator waste. The ash from the incinerator. He also stated that it is going to have the components of TDS in it. It is going to have those things that could not burn off. Those are the things that under leaching conditions are going to generate sodium chloride and calcium magnesium. These things did not burn off in the incinerator and they are there. They are going to go into our leachate. He also stated yes if we changed to something else, then it would change the nature of our leachate. If there are plans to make those kind of changes, then we should take that into consideration. For example, if we were going to take in more municipal solid waste that was not incinerated, then we would expect to see ammonia go back up, continue increase BOD possibly, and COD. He also stated that it should be a part of this discussion if there are other thoughts of going in that direction.

Mr. Peeples presented the first step at looking at what the next system might look like. He stated that we have to remove ammonia. We are going to have to do some form of membrane treatment. Reverse osmosis is the most common for leachate and probably the most likely still for here. Raw leachate coming in at the left hand side of the diagram is at 36,125 gallons per day, which is our number right now. Their scenario is that we are going to lime soda softening. We want to get rid of the calcium and magnesium right up front. Then into an ammonia removal process so we do not have to rely so heavily on the biological for ammonia removal. He also stated that we could also go up to the current biological system without the ammonia through the ultra-filtration through our RO then out to, well what comes out

of the RO, keep in mind, that is very clean water. So there is no reason to send RO water to the POTW. That is a waste of money. He also stated that the 2.2 cents per gallon for perfectly clean water. That water could be used for irrigation, watering the roads for dust control, it can also be reintroduced into the aquifer, could be recharged to ground water which has been done at other sites in New Jersey. He stated that so it does not go to the POTW at 2.2 cents per gallon. The final RO water that is almost pure water and it should not go there. But the "or" is do we go to the biological? Do we use what is there in terms of the biological? Do we need to if we can remove most of the ammonia? If not, he stated that we go directly to ultra-filtration and then to RO. RO, of course, the last step in either case is for TDS removal to get us down to where we need to be, in this case, for sending the concentrate back to the landfill, probably. There are other options for the concentrate and other options that they are looking at that he thinks has some promise.

Mr. Peeples stated so where do we go to Oxford POTW. Right now, if we were to go up through the biological process, a portion of the good stuff off of the UF, permeate, which is the cleaner stuff off of the UF, would go to the Oxford POTW. Then a portion of it would go onto the reverse osmosis and ultimately generating clean water.

Mr. Peeples stated that under the other scenario it would just be a split off between ultra-filtration and what is already gone through the lime soda softening and had the ammonia removal from it. This would go to Oxford POTW. The key with Oxford POTW is that we have to control it so that we can stay under that 3,500 pounds per day. This is one objective. From his standpoint, the other objective is the minimum amount of water that we need to send there, is preferred because it is 2.2 cents per gallon for every gallon for every gallon that we send over there. He stated that these two objectives is what he would be looking at.

Mr. Peeples stated that the concentrate from an ultra-filtration system tends to be not a problem at all going back into the landfill because it is not really that high in TDS. It is about the same TDS as the leachate that came out. He also stated that it just contains solids. Those solids tend to remain nicely within the landfill. No real problem taking that back.

Mr. Peeples stated that the RO reject water is something that we really have to look at carefully because the RO reject could be largely composed of the sodium chloride component, that component that we could get rid of otherwise. If we send it back to the landfill, then there is the possibility that year after year that keeps coming back at us. So instead of the trajectory that we see right now on TDS, it could be a much deeper trajectory. He also stated that when that happens, then everything that we do becomes more difficult. The RO becomes more difficult as we get higher and higher TDS. He also stated that we would only get into this situation where we are chasing our tail and having to go more RO because we are sending more dissolved solids back to the landfill. This is something that they will look at. There are other landfills that they can use as examples. Once they have a good handle on how much would go back and what kind of volume of water. In our case, there is some advantage because with the ash material it will absorb those liquids better than a lot of other solid wastes would. So there may be the possibility that we would not have that chasing the tail effect where we keep increasing TDS just because we are sending it back to the landfill. Mr. Peeples stated that they either design with that in mind, so that we can make a change down the road if they see that happening or they just design it up front to not send it back to the landfill and there are some options that they are looking at.

Mr. Pryor stated that he believes that we could send that back to Passaic Valley, couldn't we? Mr. Peeples stated that if it falls within their guidelines, then that would be a great thing to do. Mr. Pryor stated he was just thinking their size compared to the size of our waste stream and it is possible, right?

Mr. Peeples stated that their biggest limit that they are opposing on us right now is the COD limit. He also stated with that it would not be an issue under this scenario so that is a possibility if we could just get rid of it all together and somebody will take. That is a legitimate possibility. He also stated that in this case then it would be probably 9 cents or more per gallon because the high TDS will probably have a higher surcharge on it.

Mr. Pryor stated that the other question that he has on the physiochemical is it just stripping that you are looking at or are there other technologies? Mr. Peeples replied that there are other technologies. Within stripping itself, there is at least three or four different processes that can be used. He stated that one of the things that we can take advantage of is the excess waste heat that we have from our flare from the landfill gas which we will still continue to have landfill gas pretty much into indefinite future. He also stated that as we heat, as we warm a solution, the ammonia becomes less soluble. We could use that to drive the ammonia out of the solution as effectively as we can increasing the pH. He stated that if we do a little bit of both then that is also an option. The advantage there would be that our gas is free. Anything that we put in to raise the pH level, like lime, is not free. So we would want to balance those costs out and then also complexity. How hard is going to be for somebody to operate that we have to look at it from that standpoint too. There are multiple physiochemical ways to get ammonia out.

Mr. Cannon stated that the heating of that would not be an outside source. We will be using what we already have. Mr. Peeples stated that is right and just what we are wasting right now we would just be flaring. It is a free source of fuel for us.

Mr. Pryor stated that he guesses that we look towards improving technology rather than the cutting edge. Mr. Peeples stated that is the other thing too. Air stripping processes tend to be more proven. We could get vendors because that is what they do. His preference is to typically have a vendor that this is all they do and have them involved in the process and in designing that equipment.

Mr. Cannon stated that there is really no sense in that RO reject going back in. He means it really should be a goal of whatever we can do with it but going back in the landfill is not really what we want to do. Mr. Peeples stated that he can tell us that is definitely his goal. He does not like it going back in but they have some case studies where they have done it for a period of time and they have not seen TDS increases but this is a large amount. We are talking higher TDS. At 25,000, we are four times the TDS of a typical municipal solid waste landfill. We are up pretty high and so we are into a territory where personally, he thinks it is going to increase the TDS in the leachate if we send it back into the landfill. He does not have the evidence to prove it. He also stated that there are differences in every landfill. This one has ash and the ash may be able to hold it.

Mr. Williams stated to Mr. Peeples, that it sounds like we are kind of heading here by description that you have on the power point, there is a strong possibility that we may be able to go to a zero discharge with an RO system in place? If that is the case, then if we have to send the RO reject offsite the cost savings on possibly going to a zero discharge could cover the cost of transporting the RO reject offsite someplace else. Mr. Peeples stated that there is a lot of balancing factors in there in terms of cost and where we end up putting it. He has the arrows going to Oxford because we have the ability to send 3,500 pounds per day of TDS over there. This is likely the revenue source for them as well. He also stated that it is an easy way to get rid of 3,500 pounds even if we have a lot more that we have to deal with. This would be 3,500 pounds per day off the table. He also stated that is a lot.

Mr. Peeples stated that there are other issues also because we would be sending that 3,500 pounds per day in a lower volume of water. They may not like that as much. Obviously, they are not going to get as

much revenue off of it is one problem. The other problem is that they will usually have to bleed it in slowly if we send it as a more concentrated liquid. It is not just a straight forward process. When you have a pipeline in place and we have a close by POTW, some interaction there he thinks still makes sense but it may not in the end.

Mr. Ross questioned Mr. Williams, what would happen if you went to Oxford and said well I am not going to send you anymore water at all? Mr. Williams replied with well they are not going to like that of course. We are a big contributor to their revenue source as it is. Mr. Ross stated no that his question is could you negotiate on a lower price if you wanted to? Mr. Williams replied that he thinks that everything is open for negotiations.

Mr. Mach stated to Mr. Peeples, on the beneficial reuse of the clean water, what government entities get involved in the idea of putting that water back into the ground? DEP? EPA? Mr. Winegar replied with that would be the DEP. He also stated that what they did at another site where we modified their NJPDES permit, discharge to ground water permit for existing storm water basin and that can be considered here.

Mr. Peeples stated that it is good clean water. There are other beneficial uses. We are talking about water that is almost completely deionized. If someone needed deionized water, then it is a better source than starting with fresh water in most cases. It is already pretty close to deionized. He thinks that there are a lot of uses for this water. He stated again that the POTW is not the place because it is just clean water.

Mr. Mach stated that we are talking about a lot of water. Are we at 13,000 gallons per day, potentially? Mr. Peeples replied with yes and it is not a small amount.

Mr. Peeples discussed the path forward. He stated that right now he thinks that the first thing is that we try to get the costs down without spending much money. Just trying to find a way to get our costs with the current one down so that we do not lose money on it and not to "moth ball" it. He also stated that they do have an additional evaluation to do. They have multiple options out here. They all have to be looked at in terms of cost effectiveness, proven track record, operations cost, and all of that. He also stated that the bench scale testing has to be involved. We have to do that with any leachate because there really are differences between leachate. There is no such thing as leachate. Every landfill has their own leachate. He also stated that this landfill has a very different leachate than many others. Bench scale testing of this because there is no substitute for it. He would say that there is probably, for key components of the system that we would be proposing, he thinks that a pilot testing makes sense to do that. He thinks that we do not want to take big steps without knowing exactly what we have and what we are going to get from this specific leachate not just anybody's leachate.

Mr. Cannon stated that this ties into our original conference call. We were trying to stage this and look at it so that we do not get ahead of ourselves. We do not expend monies that we may not need to expend. Mr. Peeples stated right and he does not know what everybody's time table is but maybe there is a little bit of time to do that.

Mr. Mach stated that the bench scale testing and the pilot testing of the technologies, are those costs not included in the quotation that we received thus far? Mr. Peeples replied with no. They were not and he thinks that is the next stage really is the bench scale testing.

Mr. Peeples stated that he thinks that the one thing that he guesses that he really did not mention here was one of the issues that had been raised or questions that have raised as to whether or not the existing leachate lagoons ought to be covered or not covered. They did look at that as kind of a quick analysis that we could do right away. The answer is maybe because right now it depends on which way we are going to go. If it came down to hauling, he stated then it would be absolutely at 8.7 cents per gallon for every drop of rainfall that falls on this adds up. We are looking at \$1 million dollars a year. Other options it does not make as much difference because that is pretty much the ionizer, the water has very little in it. It does not really effect largely how we go through an RO system or other systems. He also stated that they did look at this and he thinks the answer is it depends on which way we go.

Mr. Cannon stated to Mr. Peeples to expand on this a little bit. If he is saying that we are not going to be sending that and mixing that, then it is not an issue. Is that what he means? We are not using that water to mix? Mr. Peeples stated so right now it does get mixed because it is inevitable. Our rainfall gets in there but he can envision scenarios where we would not want to have it in there. That we do not want that extra volume but he could also envision scenarios where it make virtually no difference at all because it is clean water that will ultimately make its way through the reverse osmosis system. He also stated that maybe he should not say no difference at all but maybe a minor difference compared to the cost of covering that. Mr. Cannon stated so give me a couple of the instances of it being covered that would be important. Mr. Peeples stated that if right now if the decision were to go to hauling, and he is not saying that is likely at all, but then it is pretty straight forward. It is just gallons being sent at 8.7 cents per gallon. He also stated that an instance at which it would make sense to still cover would be probably related to the biological process. If we were to maintain a big component of the biological process then he thinks right now the limitation, there is a couple of places that we already discussed where there might be limitations. If the limitation is on the ultra-filtration system and we end up with kind of an upper amount in terms of gallons per day that we could get through the existing system, if we do not want to upgrade it or we do not really want to change it, then it might make sense. He thinks that most scenarios it probably makes most sense to not cover it.

Mr. Pryor stated that the way he looks at it initially, it did not make sense to cover it if we were only going to turn around and add well water. That was the basic thing but as we move forward and it will depend on the design, he is assuming that there is going to be hydraulic bottle necks, hydraulic loadings that they would want to keep it out at that point. Mr. Peeples stated that for a volume bottle neck, then yes but in almost any scenario, he thinks that we could design around that and probably the cost of covering it is unlikely that we are covered by savings in other areas.

Mr. Peeples stated that this is what he has on the presentation and asked the Board if they had any other questions.

Mr. Williams stated that we also put together a timeline of some next steps moving into December and so on. He asked if Mr. Peeples would like to cover this. Mr. Peeples stated that he thinks that they could finish the current scope and he really needs to talk to Mr. Winegar about that timeline but he thinks that they are very close to finishing the current scope with what they have done. Not just here but other things that they have done to get ready for that. He also stated that he thinks that timeline also changes a little bit from what they presented to us in that. Their closer look at the treatment system has really revealed that the sooner the better on getting a look at that treatment system and getting that one, hopefully, tuned up to the point where we can get its costs down below hauling costs. That switches that timeline around a little bit. He thinks that is the high priority item right now. He also stated that he sees no reason not to want to parallel track move right into bench scale testing soon within that same time frame. He does not have a really clear answer for us on that but he can pretty quickly.

Mr. Cannon stated that he thinks that what we are looking at multiple paths going forward. It seems to him that the two that are priority list (1 and 1A) would be the bench testing costs which are proposed. Then the parallel one as far as cost of the recommendations that are going through the systems and what we may be able to not necessarily have an expense beyond T&M's time to possibly tweaking the systems recommendations as to what corrections and/or changes would have immediate effect without necessarily going any farther down the road with bigger recommendations. He stated that these seem to be 1 and 1A to him. Is this where we are at? Mr. Peeples agrees.

Mr. Cannon stated that the presentation was extremely well done. He thinks also now to go to number 2, after 1A and 1B, we are looking at evaluating the building as to then adding the lime solution and the cost of that. If we went with all of that, then that will give us results and then we could all digest and look from there out as far as the stages. Mr. Peeples stated that will come out of the bench testing. Mr. Cannon questioned is the 1A and 1B, for lack of better words, is the pilot would be included with that too or just the bench? Mr. Peeples replied he thinks that we would do the bench and he thinks that if we did 1C as pilot. Mr. Cannon stated that is how they will give us numbers on that so that we know where we are at as far as numbers.

Mr. Pryor stated that he is not sure what they are contracted for but is this going to be compiled into a report at this point? Mr. Peeples replied he thinks that he will expand on what they have and complete that report. Then that report will include those recommendations. Mr. Pryor stated the recommendations for the next step.

Mr. Williams questioned Mr. Peeples, is the bench scale testing that is being proposed already included their existing proposal? Mr. Peeples replied that it is not and they were going to do kind of a simplified bench testing with Dynatec, which is inexpensive. As they looked at that this more closely, and it was not in the scope, they thought that they could fit those dollars in. He also stated that as they looked at it more closely, the bench scale is more complex than that. Mr. Peeples stated that what they were planning to do and what they were willing to do really did not cover the spectrum of what they thinks needs to be the information that we need to get. That is where the difference is. He also stated that the smaller amount with Dynatec, they thought they could fit into the existing contract and it was not really a part if we go back to the proposal it was called out as a separate line item but he thinks that it does not make a lot of sense to do that kind of minimal thing now. He thinks that it is better to do a broad spectrum that is going to cover all the alternative and be able to send the solution to the right places, Dynatec being one of those, and get all of the answers that we need.

Mr. Cannon stated that regarding the timeline, and he is going to put him on the spot, what are they looking at as far as getting stuff back to us? By January meeting? He stated that they can discuss and get back to us. Mr. Winegar stated that the first thing is to get their final report and then concurrently with that, they will put together a proposal and move the other half forward. Mr. Cannon questioned if they think that January is a possibility? Mr. Peeples stated that he thinks that they could move quickly with this. He would like to move as quickly as we can on the treatment system too to try to get those costs down. Mr. Cannon stated that certainly coming up and sticking your head in any of the places that the more of that, the better. He also stated that he thinks that gave us a lot of enlightenment. He thinks that there is maybe some things that Mr. Ross seems to come up with a couple of ideas when he walks around out there that we may be able to use.

Mr. Pryor stated that the one thing that is in our court, we do have to get them that leachate model so that they can see they can see what is coming down the road. Mr. Williams stated that it has been requested numerous times. Mr. Pryor stated that he was promised momentarily.

Mr. Cannon thanked T&M.

Mr. Williams stated to T&M that if they want to go down to the plant, Mr. Heater would be more than happy to take them down. Mr. Peeples replied that they would really like to.

Mr. Peeples, Mr. Winegar and Mr. Ross left the meeting at 11:22 am.

FACILITIES/RECYCLING

Mr. Williams stated there is nothing to discuss with the treatment plant other than what we just heard today. So, there is nothing more to discuss.

Mr. William stated that the landfill operations continue to run smooth. No issues.

Mr. Williams presented A-3, the 2017 disposal rates. He stated that we all saw this at last month's meeting as a hand out. He also stated that in order for us to move forward with getting our contracts out, he basically left the numbers the same. We have increased them every year over the last several years. He would propose that we leave the rates flat moving into next year but this is up to the Board.

Mr. Cannon questioned Mr. Williams, why would you propose that? Mr. Williams replied that we have raised our rates over the last four or five years at \$4.00 to \$5.00 per ton. We have gone up pretty substantially on some of them and other ones we have gone up even more, from \$31.00 to \$41.00 over a five year period so that is even a greater percent. He also stated that we have left flat fees the same. Mr. Cannon questioned where is the \$31.00 to \$41.00? Mr. Williams stated that if you look at the 9,001 and above under the contracted solid waste. He stated in 2012 was \$31.00 a ton and we are up to \$41.50 currently.

Mr. Cannon stated that he likes the idea of a dollar increase. Obviously, he stated that the cost of things go up. The cost of expansion is going to cost a lot of money with all the engineers and the possibility of an additional scale.

Mr. Allen questioned if we are under regulatory requirements for the pricing schedule? Mr. Williams replied with no and as long as we do not go over our tariff. He also stated that once we go over our tariff then we have to seek regulatory approval.

Mr. Allen stated that he agrees with Mr. Cannon and he does not know whether a dollar is the right amount but he does not see keeping it flat. He also stated that expenses are going to go up.

Mr. Pryor stated that his background is more water and waste water than solid waste but he knows that with the consumer it was much easier for them to swallow a small increase every year and plan for it

then to get nothing for a couple years. Then all of a sudden they get sticker shock. He intended to argue for at least just the cost of living as we go forward.

Mr. Cannon stated that he thinks that we have a consensus here. Would you like a motion here? Mr. Williams replied with yes.

Mr. Williams stated that we have four different sections here. We have the non-contracted, which is the residential customers section which is the top piece, then the contracted solid waste in three different sections including the ash.

Mr. Cannon stated that he does not feel that there is a need to raise the convenience center customers. The bag fees, the Saturday flat fees or any of those fees, he does not feel the need to be increased. His proposal would be only for the #10 and #27 to increase the \$1.00 per ton. Mr. Williams questioned on the ash also? Mr. Cannon replied with is that a separate discussion that we have with them? Mr. Williams stated that it is a contract that has to go out to them and so we need to decide today because that contract will go out also. Mr. Cannon stated that he thinks also \$1.00 there and he thinks that they brought up something important today. He understands that we have pluses and minuses here with the ash but are we giving ourselves additional leachate problems and treatment problems by that ash. We never quantified that. We really cannot but that is something that we could use when the negotiation comes back. He stated that yes and he would include them in \$1.00. He would say the bottom from #10, #27 and the Warren ash all a \$1.00 would be his proposal.

Mr. Williams stated that the non-contracted would be zero increased and the contracted would be \$1.00 per ton increase. Mr. Cannon replied with yes.

Mr. Allen made a motion to increase all contracts \$1.00 on the tonnage for 2017 and the Warren ash increased to \$1.00, the non-contracts stays at the flat rate that we have it at , seconded by Mr. Pryor.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

Mr. Williams presented the next item on the agenda which is A-4, Request for Bids for new truck scale which was put before the Board today. He stated that he, Mr. Tipton, and Ms. Fina went through and made some changes to the scale bid. This is not something that we need to act on today. He stated that in red are the changes that were made and what was included, the strikeouts so on and so forth. He also stated that we could put this back on the agenda for the December meeting. Mr. Cannon questioned Mr. Tipton that is this basically for the issues that we talked about with Advance and Sans and their issues as to how the bid was written up? Mr. Tipton replied that we tried to address comments and issued raised by both because of the whole issue of not being too specific so that we are not narrowing it down to only one potential vendor. Mr. Tipton stated that they tried to broaden it to the best of their ability and the best of their understanding of the technical issues because we had two different vendors taking two different complete views of it. They tried to do their best to find the middle road.

Mr. Cannon stated, again, he glanced at it earlier and they only one that he saw and he is not sure on it and maybe they had this discussion but would they still be able to and a requirement of the bid be that they have to communicate? Mr. Williams replied with correct. One of the items in here, is stricken out and we need to make sure that is left in there. He also stated that where we asked for the communication and right now it is stricken out. We are going to leave that one in there. Mr. Cannon stated that is why he is asking about it. He also stated that it will stay in as to them being able to communicate so we are not parallel system. Mr. Williams stated right so we are not two different systems.

Mr. Cannon suggested that the additional homework for our December meeting, everybody takes a look at this and come back with questions for December. Mr. Tipton stated to the Board, to feel free to email him. He also stated that if you email him in advance then it will be easier for him to do the tweaking so that we can be ready in December.

Mr. Williams stated that it's the first twelve pages of what we have here and not the entire document.

Mr. Cannon stated that this will be saved for December. If anyone has anything ahead of time, then send to Mr. Tipton and he can incorporate them all in a new one and we will go from there.

Mr. Williams stated that the next four items on the agenda, there are no changes.

Mr. Williams stated that there were no bids received for the electronics. He also stated that one was picked up but no bids came back on the electronics recycling. They actually picked up bids before but they never bid. He also stated that it is an outfit out of Allentown.

Mr. Cannon questioned if Mr. Williams made up a letter or something additional about the late fee issue? Mr. Williams stated that this will be issued when the contracts go out. Mr. Cannon questioned if the Board will see it first? Mr. Williams replied with yes.

GENERAL COUNSEL'S REPORT

Mr. Tipton had no report for open session.

Mr. Cannon questioned that we were good on that document as to volunteer groups or anybody coming in, are we all set on that as far as liability and signing and so on and so forth? Mr. Tipton stated that he believes we were.

NEW BUSINESS

None

OTHER BUSINESS

Mr. Mach stated that we had a letter from Cornerstone that was in the agenda packet. Mr. Cannon stated that we are going to discuss the contract issue in executive session. He also stated that we are going to have the Cornerstone dollar figure issues, the personnel issues, and the Tilcon issue.

Mr. Cannon stated that he had Mr. Williams write a letter to send to the Freeholders. We all received a copy of it this morning regarding Mr. Pryor's appointment. His appointment will be the next one up.

CLOSING PUBLIC COMMENT

None

PRESS COMMENTS & QUESTIONS

None

EXECUTIVE SESSION

Mr. Olshefski left the meeting at 11:40 am.

Executive Session was entered at 11:41 am.

R E S O L U T I O N

R-11-03-16

AUTHORIZING EXECUTIVE SESSION

WHEREAS, the Authority has a need to discuss the following matter(s) in Executive Session:
Contract Negotiations, Litigation, and Personnel

It is not possible, at this time, for the Authority to determine when and under what circumstances the above-referenced item(s), which are to be discussed in Executive Session, can be publicly disclosed;

NOW, THEREFORE, Pursuant to N.J.S.A. 10:4-1 et. seq., BE IT RESOLVED by the Pollution Control Financing Authority of Warren County that the matter(s) as noted above will be discussed in Executive Session.

Moved By: ***Mr. Pryor***

Seconded By: ***Mr. Mach***

ROLL CALL:	Mr. Allen	-	Yes
	Mr. Pasquini	-	Absent
	Mr. Pryor	-	Yes

Mr. Mach	- Yes
Mr. Cannon	- Yes

I hereby certify the above to be a true copy of a resolution adopted by the Pollution Control Financing Authority of Warren County on the date above mentioned.

Jamie Banghart, Recording Secretary
Dated: 11/28/16

Mr. Pryor made a motion to come out of Executive Session, seconded by **Mr. Allen**.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

Regular session resumed at 12:30 pm.

Mr. Cannon stated that we are back in open session.

Mr. Cannon stated that the Board is moving ahead with the recommendation from the Executive Director to promote from within and that Mrs. Jamie Banghart go to the full-time Administrative Supervisor. He congratulated Mrs. Banghart. He also stated to advertise for the Secretary position immediately.

Mr. Tipton stated that a motion is needed to approve this.

Mr. Mach made the motion to approve Mrs. Jamie Banghart to the full time Administrative Supervisor beginning January 1, 2017 at the annual salary of \$52,000.00, seconded by **Mr. Allen**.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

Mr. Cannon stated that after the adjournment of December meeting, we will go upstairs for a little Christmas fair.

Mr. Cannon asked the Board if they are good with everything until December. The questions as far as Cornerstone issues as far as their changed timelines now that we are in public session if anybody had any questions or problems with that or are we going to cross that bridge when they come in? Mr. Williams stated that we currently have bids out for the topographic survey for next year and we will get a really good picture of what space we have left when that survey is done and how it cross references their timeline. Mr. Cannon stated that the numbers and how far out.

ADJOURNMENT

With no other business to discuss, **Mr. Pryor** motioned to Adjourn, seconded by **Mr. Allen**, at 12:32 pm.

ROLL CALL:	Mr. Allen	- Yes
	Mr. Pasquini	- Absent
	Mr. Pryor	- Yes
	Mr. Mach	- Yes
	Mr. Cannon	- Yes

Respectfully submitted by:
Jamie Banghart, Recording Secretary

Approved: 12/19/16