

Minutes of TIFA LLC Meeting
April 18, 2017
11:30 a.m.
City of Titusville Water Resources
Mourning Dove Water Plant
2836 Garden Street
Titusville, Florida 32796

Persons in Attendance

Mike Brown, Miami Corporation, TIFA Management Committee Member
Jim Ball, City of Titusville, TIFA Management Committee Member
Sean Stauffer, City of Titusville, Water Resources Director
Richard Broome, City of Titusville, City Attorney
Andrew Jantzer, City of Titusville, Water Resources Deputy Director
Anna Abreu-Ochoa, City of Titusville
Jim Boyd, Boyd Environmental Engineering, representing Farmton Water Resources
David Fuechtman, Farmton Water Resources (by telephone)
Susan Pattock, Miami Corp. (by telephone)
Pat Gagliardi, Farmton Water Resources (by telephone)
Helen Hutchens, Miami Corp. (by telephone)
Bob Oros, The Colinas Group (by telephone)
Jim Perry, GMS LLC

Jim Perry conducted the meeting.

Action Items

I. Approval of the Minutes of the TIFA LLC Meeting of March 23, 2017

Member Brown moved to approve the March 23, 2017 meeting minutes. Member Ball concurred and the motion passed.

II. Consideration of Proposed Restoration Plan for Well WR-8 (Presenters: Sean Stauffer and Jim Boyd)

Mr. Stauffer: I wanted to hand out some of the results from WR-8. At the last meeting we talked about an interim step before we go forward with any back plugging. We would operate the well at a lower flow rate to see what happened. The Board had asked for a minimum of five data points at the low flow rate. I can forward this graph to Chicago as well. What we see is that once the well was turned down, the chlorides dropped pretty significantly. They went from around 100 down to about the 70-80 range and we were able to pick up six data points prior to this meeting. We will probably have a few more data points that will be coming in because the

testing is not finished yet. Clearly, you can see that the well operates at a much better chloride level at the lower flow rates. It is good to know the well reacts, but it ultimately doesn't solve the problem. We have other proposals, The Colinas Group as well as Hausinger and Jim have put those together and I want to make it clear that the City has the data points. I'm glad we have that information and it is something that is good to see but the realization is the well is only running at 40% of its design capacity, which is not where any of us want to be. We want to get 100% out of our investment. The City is comfortable moving forward with the rehab plan as proposed by Jim as well as we think it is a good idea to have Bob Oros with The Colinas Group there during the activities in case we encounter any problems as well as to give expert advice during the process.

Mr. Boyd: I will briefly go through what we are proposing to do and then maybe you want to get Bob on the phone. As we discussed in great detail at the last meeting, in looking at some of the geophysical logging work that was done twice, first when the well was drilled in 2014 and again when it was reevaluated in 2016 due to this chloride issue, we determined that at a depth of around 180 feet below the well flange there appears to be, based on conductivity testing and actual visual evidence that we can see in terms of cavities being located, there appears to be a location where the higher chloride water may be coming in. Fortunately, below that elevation, based on geophysical testing evidence, there doesn't appear to be any flow coming in from the bottom of the well up to this location. So, from about elevation 198 feet below grade up to 180 feet below grade, there is no flow coming into the borehole. At about 180 feet there is a significant amount of flow coming in, which appears to have high chlorides based on the conductivity testing. A way to try to address that would be to back plug the well from the bottom up and a little bit above that 180 foot zone. We propose to take it to about 170 feet, seal off those cavities and hopefully seal off the source of the high chloride water, with the hope being that from that depth up to the top of the casing through the remainder of the open borehole section that we will have enough good quality water coming into the borehole that we can still have a productive well and hopefully get it back closer to its original design capacity and with lower chlorides.

We developed a plan for doing that, the City will be participating, I will be participating in it and Sean indicated the City is also on board with having The Colinas Group participate too, which Farnton definitely agrees with. It is essentially a three stage approach. This is basically an experiment. The first stage is to use a sealant, silica sand, which can be easily extracted so we are going to use that first to seal it up to about 170 feet using silica sand. Then, we are going to reinsert the well pump, test it for drawdown, chlorides and sand content. We are basically going to try to find a sweet spot. We are hoping that we can find a pumping rate that is closer to the original pumping rate that is giving us good water quality and that will all be done during Stage 1. Stage 2, we extract the temporary sand back plug, and hopefully we had acceptable results in Stage 1, which would lead us to want to permanently make this improvement. Stage 3, we permanently make the improvement by putting in a bentonite back plug, which is a much more robust back plug. It is a permanent back plug and again up to the same elevation. Then we reinsert the well pump and we check it again at Stage 3 to ensure we are at where we were at Stage 1. That is a summation of what we propose to do. We have an evaluation that is in your agenda package wherein Bob Oros with The Colinas Group evaluated everything I just described to you and they are essentially in agreement with what we are proposing to do.

Member Ball: Is the report in the package the same as the April 7th evaluation?

Mr. Boyd: Yes, this is Bob Oros' report. The restoration plan is slightly different. I updated it and that is also in your package. It has been updated to specify which entities participate in each of the different stages of restoration.

Member Ball: I think your summary and I went back over the minutes and all of that is just great. Since we are documenting the decision we are going to make today I would like to have The Colinas Group available for a couple of questions.

Mr. Oros joined the meeting at this time by conference call.

Mr. Stauffer: Bob, we discussed briefly the plan and went through the plan itself. I also talked about the City's position in support of the plan as well as your assistance in the field during the work and Member Ball has a few questions he would like to ask you about the plan in general.

Member Ball: I appreciate you being on the call and The Colinas Group is providing advice and counsel on this to TIFA as our consultant, correct?

Mr. Oros: That is correct and just so you know I have been providing support to the Farmton Project with Devo Engineering for three or four years now. I'm not new to this project. I have been working on it for quite a while.

Member Ball: I think Jim Boyd has provided outstanding analysis and background and all that. I really value having a second set of eyes that is accountable to TIFA and that has already proved itself to be a good thing to have and I read your analysis and recommendations and it looks like you are absolutely in lockstep with Jim Boyd's analysis. I just have a couple of questions and we don't have to act on this right now but I did want to endorse the idea that we should have you staying with this process through the test period and I know there is a scope and an associated fee that we are going to look at later. I had a question about the period of time doing the temporary test, it looked like it was about a three to four week period depending on when we pull the trigger to start, which I think will be immediate if we act today. Is that going to provide enough sampling data points to get comfortable that it has been successful before we make it permanent? I would like an answer to that and if the answer is absolutely so, maybe we don't need the second piece but I would like to give the test team the flexibility to make a judgment that some extended period of sampling is advisable or not.

Mr. Oros: If we are right about the solution features down in the open borehole section, if you will recall reading the report there was a photograph of the borehole camera showing some pipes that run right across and intersect the borehole. We think that may be the conduit of poor quality water entering that borehole. If we are right about that, we should see a response in the water quality being pumped in that well quickly and I expect we would see it the day we seal it and start pumping the well. I think it will happen right away. We don't think this is going to be a long process.

Member Ball: I just like to be sure we are giving you the flexibility and that goes without saying it because you will be watching what is going on and if you saw something that was unexpected I think you would make the adjustments that were advisable by working with each other.

Mr. Oros: My point is this, we have a couple of reasons to think that water is coming in at those solution features in the rock based on not just the camera but also the geophysics. We ran the specific conductivities and geophysics in that hole, we tested the water quality running a standard survey. We certainly saw a spike in the flow at the same level as those solution features in the rock. We had three different sources of information that support this theory of ours that we have a small discreet zone that is allowing poor water quality to enter the borehole. I have a

pretty high level of confidence that if we block off that feature we are going to see an improvement in water quality quickly. If we don't, then our theory is wrong. In any case, the only way to determine whether this theory is correct or not is to make an attempt to plug the hole and pump it and see what happens. There is not going to be anything lost regardless because we can always go back to lowering the pumping rate if this doesn't work but this ought to give us a chance of improving the water quality, not just stabilizing it.

Member Ball: That actually takes me to question 3 and I will come back to 2. Since you just touched on it I know that Jim in his presentation last month and it seemed very reasoned felt like the worse case is we go back to where we are today. Are you confident and comfortable that is the worse case with the temporary plugging that we could undo that and essentially go back to where we are today?

Mr. Oros: Yes.

Member Ball: Okay, the only other question I had was a concern that I can probably get addressed pretty quickly by you as to whether we could be impacting WR-9, which is 50 feet away. Is there any benefit to stepping up the testing on WR-9 while this test is in progress? If we plug the suspect spot in WR-8 are we going to migrate a problem to WR-9? Are we confident that we are not?

Mr. Oros: No, that is not going to change what is going on in WR-9.

Member Ball: Okay. I don't want to spend money unnecessarily. You would not see a rationale or reason to step up the testing in WR-9 in parallel with the increased sampling on WR-8?

Mr. Boyd: We already have WR-9 on an accelerated schedule. WR-8 and WR-9 are on a weekly schedule and all the other wells are on a monthly schedule.

Member Ball: You are probably going to get four data points on WR-9 during this.

Mr. Boyd: It depends on how long we schedule the repair. Again, the timeframe of the testing is basically dependent on the availability of the well driller. He just started drilling yesterday or today on the Farmton well and it is a four week process. That is why we are very grateful this meeting was moved up. If it is approved by the Managers, we want to get this temporary plug in as soon as we can to give us the most amount of time while he is still in the area to come back in and evacuate the temporary back plug and hopefully install the permanent back plug if the testing goes well. I agree with what Bob said, I think we are going to know real soon. I think we are going to know the day we are doing the testing how it is doing. The plan is once we get the back plug in and do the drawdown testing and the water quality testing, we are going to have a period of time where I'm hoping the City will be sampling twice a week. That is going to validate what we determined during the field testing, also it is going to give us an opportunity to see how it does over time. We are not going to have this well connected to the system, we are going to be pumping through the bypass pipe but it is going to be in the same rotation it is on now, it is going to pump 12 hours a day and be off 12 hours a day. We will have hopefully 8 or 9 data points after this back plug is done to validate what we determined during the initial testing period. We are going to start out with the lowest rate we can pump it at, we are going to check the sand content making sure we are not pulling the sand out of the well that we just put in there, we are going to slowly increase the pumping rate and as we are doing that we are going to be taking water quality samples. Bob has a field test kit for chlorides and we are going to be sampling the water as we go through each one of these stages of the pump test. I mentioned to you last time, I think our ceiling for drawdown that I would feel comfortable with is around 14 feet, because of all the other wells we have onsite, we have one operating at that

level and it is doing just fine, so I would be really nervous if we went beyond that. Within that window we are going to try to get the pumping rate as high as we can and see what happens.

Member Ball: That is fine and I get that and I'm on board with that and I think Bob was going to finalize a comment about why we should be comfortable that remedial action on WR-8 is not going to have any impact on WR-9.

Mr. Oros: I got the impression from the nature of your question that you thought we are plugging off a pipe or solution feature in a formation that may be contributing poor water to WR-8, and that by blocking it off it is going to allow that water to go over to WR-9. I don't think so. It doesn't work like that usually. If you think about the matrix of this aquifer it is more like Swiss cheese than it is like a sponge. The holes in the rock are fairly random and it appears at least at this one well location we have some kind of an interconnection with some kind of solution feature network that reaches deeper into the aquifer. To me it is like an unlucky coincidence. That is why I think we have a reasonable shot at restoring the water quality to a lower chloride concentration if we can block that flow channel up.

Member Ball: Okay, you understood my question correctly.

Mr. Boyd: Jim, just so you know, Well 9 is 1,000 feet away, it is not 50 feet away from Well 8.

Mr. Stauffer: I thought they were closer.

Member Brown: No, in fact Well 9 is closer to the railroad.

Mr. Boyd: Well 9 is between Well 8 and the railroad.

Member Ball: That is good clarification because I wasn't sure how close they were to one another.

Mr. Oros: It is my understanding that in Well 9 the water quality has been fairly stable for a while now. Is that right?

Mr. Boyd: That is correct. We initially reduced the flow on Well 8 and Well 9, and it seemed to work on Well 9, it is still higher than the other wells but it is stable and it is bumping along in the 60's and 70's. It is not a concern right now. If it stays like that we are going to be happy with it.

Mr. Stauffer: I want to thank you Bob for giving us some additional comfort level with the steps we are taking because there were some good questions that Jim had and I feel comfortable and look forward to having this be successful.

Mr. Oros: I think we have a good plan this is our best shot at turning this thing around and improving the water quality and hopefully being able to increase the production capacity at the same time.

Member Ball: We are all definitely for that. Appreciation for the effort and patience to wait for some additional sampling and to make sure we have all the ducks in a row. I know it probably put a little pressure on the schedule with the well driller. All that being said, I'm happy to make a motion to proceed.

Member Ball moved to proceed with the remedial plan as presented by Jim Boyd and endorsed by The Colinas Group with The Colinas Group being a participant in the process as identified in the plan with the cost of their participation being \$1,717.20. Member Brown concurred and the motion passed.

Mr. Oros left the conference call at this time.

Financial Items and Reports

III. Ratification of Expenses Paid from Operating Account and Request for Reimbursement (Presenter: James Perry)

Mr. Perry: Item three is ratification of expenses paid from the operating account in the amount of \$6,241.15 and these are related to FP&L bills for the wells.

Member Brown moved to ratify the expenses paid from the operating account and request for reimbursement. Member Ball concurred and the motion passed.

Staff Reports/Informational Items

IV. Update on Rail Trail Project (Presenter: Andy Jantzer)

Mr. Jantzer: The contractor has stepped up their execution considerably. They now have at least three crews that are actively working at different locations on the rail trail. It appears they have all the permits in hand so their subcontractor for the stormwater crossings is also active. There is a lot of activity going on. This last week they uncovered the first exposure of the City raw water main, a storm crossing and we are working out some details with that but this is to be expected. They are being cooperative in working with us and when they do uncover a utility we are going to try to continue with that cooperation by both parties in getting any conflicts resolved. FDOT is actively involved and we are working with both the contractor and FDOT to inventory damages to pull boxes that are occurring as they move along. They are taking the means and methods approach of relying on the installation of their lime rock sub-base as a means to protect the pull boxes up along the route. One of the things that is driving that is that the pull boxes, when they are bedded in a strong structural surrounding such as lime rock or asphalt, that is when they are intended to provide their highway loading and strength. When they are just in sand, they are more vulnerable to damage. They are working through that plan of putting down the lime rock and then we do the final adjustments of the valve boxes afterward. We are working with them on that.

Another issue has come up as we have the northern reaches of the rail trail being worked on in addition. We hear there are plans for Volusia County's contractor to start this summer. We want to make sure that we have access to all of our wells and monitoring wells as well from the rail trail and we are going to work out a monitoring well access plan and there may have to be some reviews based on what changes are made to the rail trail. There may be some revisions to the trail access routes but we are at the early stages of working through those details at this point.

V. Area IV Phase 2 Update (Presenter: Sean Stauffer)

Mr. Stauffer: We still have issues with some leaks at check valves in Phase 2 and I believe on Tuesday, the 25th, Felix will be up there with a representative of the manufacturer and they will be doing some work on the wells to try to get those leaks fixed. We understand some

of the wells will be turned on and off and the City is fine with that. We will make a note to the operators that there will be some operational changes but these should be short lived. We would rather turn the wells on and have it flow into the pipe. There is no reason not to, no reason to take all that time to set up discharge piping for these short maintenance activities. There were also issues with paint splatter.

Mr. Boyd: They are basically going through the punch list. The punch list was: leaking check valves, paint splatter and they need to do some more touch up painting. They were rushing to get some of the wells done the last day they were here, so they didn't do a 100% job on getting every little item touched up. They will be doing that on Tuesday as well.

Mr. Stauffer: Is the expectation that they will finish it all on Tuesday?

Mr. Boyd: They are sure hoping that they will finish on Tuesday.

Mr. Stauffer: The manufacturer's representative will be there Tuesday and anything going on with the wells turning things on and off by hand will only be on Tuesday?

Mr. Boyd: That is my understanding and I will let you know if it needs to bleed into the next day but I don't think it should have to. They should be able to get everything done in one day.

Member Ball: What is going on with the fire situation? Have we been immune from that so far?

Member Brown: We only had one reported and we got a rain with a little lightning about 12 days ago and that was a result of that lightning activity. Burn bans are in place in all the surrounding counties. My expectation is that we are going to enforce that for our hunting club after this Sunday. I'm looking at the possibility of curtailing access so it would just be the folks in the contract arena on the rail trail. I have had discussions with them about that yesterday, to be aware, here are emergency phone numbers, call us if something happens and we can dispatch things from there. I will continue to meet with those guys. One of the best things we have working for us is a 200 man hunting club at this point. They are good eyes and ears. We are about to begin our annual fire watch detail, during which our hunting club mans the tower at Lake Ashby and would be able to see and spot fires at that distance from there to the wellfield. That will be a tremendous help once we get that moving and then we just have to get through the initial phase of dry lightning before we get rain.

Mr. Boyd: Getting back to the well restoration for WR-8, I will contact Jeff Hausinger, the well driller, and find out when he can do it. He said maybe this week or next week. It depends on where he is with his construction with the Farmton well. The City is going to need to pull the well pump in advance of the sand seal being added. How much lead time do you need? If I call today and he says he can do it tomorrow, how quickly can the City respond? We need the well pump pulled and the hose hooked up to the discharge pipe for the subsequent flow testing, which may be the same day or may be a day after, it depends on how everything works out. We will have to coordinate that, but I wanted to know how much lead time you need to pull the well pump.

Mr. Stauffer: Certainly as much time as you can give us would be appreciated. If it is an emergency we will get up there and get it done.

Mr. Boyd: I will call this afternoon and see when he would like to do it and then I will get with you.

Mr. Stauffer: That would be great, as much notice as possible so we can hopefully make it part of a regularly scheduled visit to the wellfield as part of a sampling or some of the other trips we are making.

Other Business

Ms. Hutchens: I wanted to update the members to let them know that the property insurance that was discussed previously has been bound with our insurer and is in place. We are just waiting on invoicing.

Public Comment

Next Scheduled Meeting

The next meeting was scheduled for Tuesday, May 23, 2017 at 11:30 a.m.

Open Items

Adjournment

Member Ball moved to adjourn the meeting at 12:09 p.m. Member Brown concurred and the meeting adjourned.