

Recycled Water Committee Meeting

Greenhouse, 2500 E. 23rd Ave.

May 17, 2016

Facilitator: Lisa Carlson

Members present: Scott Gilmore, Raeann Gagne, Cindy Johnstone, Jay Rust, Steve Geist, Rob Davis, Thad Jacobs, Russell Plakke, Brenley McKenna, Katie Knoll, Sonia John, David Matthews, Sonrisa Lucero, Max (intern), Damian Higham, Mark Cassalia, Deb Binard, Doug Woods, Al Polonsky

Lisa: (Introductions were made)

Agenda items are as follows:

- Lunch, Agenda Review, Introductions and Ground Rules
- Review and clarification of brainstormed vision
- Short-term Mitigation and Data Collection Strategies
- Small Group Breakouts
- Report out and agree on the summer's strategies
- Next Steps and Action Items
- Adjourn

Ground rules were covered last time, but I thought they should be repeated. The ground rules for this meeting include one person speaking at a time, be concise and share the air so that everyone can participate, please speak up during the meeting and avoid the 'real' conversations that happen during the breaks, be hard on the issues and not the people. I've never seen it helpful to personalize things because it escalates conflict and doesn't help during deliberations. For decision making rules, though we won't be making any large decisions today, future decisions will be based on consensus. The goal is that everyone will understand the reasons for the decisions. The fall back to this, because this is an advisory committee, is that Denver Water and Parks & Rec are going to have to take what was said here on advisement. If we are on the border on everything we will want to work to see if we can reach consensus but if we can't because of the time elements then we will have to work off of the majority votes that are present. The last rule is that misery is optional, if you need to stand up because your back hurts then please do, please use the restroom if it is needed and feel free to let us know if more breaks are needed or the agenda isn't working for you. Please silent your cell phone before we get into the meeting. Feel free to record the meeting if needed or request it from Raeann but the recordings are for the meeting group only. Do these rules still make sense?

(Agreement from the group)

Lisa: (Introductions were made)

Lisa: I'm not sure who all will need a copy of the Ideal Vision for this group (handouts passed out for those who need a copy). This is from when we broke out into three small groups the last meeting (4/26), the topic was: It was December 2016 and this advisory committee has been wildly successful, what are the elements that have made it so successful? I consolidated all the sticky notes and I typed it all up for the group. This is how the Steering Committee came up with today's agenda. We need to be cognate in

our discussion today there are some constraints in terms of personnel and money resources and timing. Hopefully we can problem solve with each other to come up with what we can do this summer.

Strategic Goal Area #1: Criteria for Implementation Plans and Strategies, Strategic Goal Area #2: Short-term mitigation strategies, Strategic Goal Area #3: Long-term mitigation strategies, Strategic Goal Area #4: Research and data collection, Strategic Goal Area #5: Community Outreach and Education.

Scott: I know we have been recording the meetings (as you know the meeting minutes are very detailed). We have the minutes done. I apologize for not getting them uploaded but the person that does it was out of the office she will get them Thursday along with the presentations.

Lisa: The bulk of last month's meeting was the presentations and the small work groups. In terms of we heard in the presentation last time of what is going on in Denver to understand the short-term mitigation and data collection strategies for the summer. There are two new handouts that should be front of all of you one about "Denver Water, Denver Parks, Denver Environmental Health Data Currently Available and 2016 Data Collection Efforts", the other is: "DPR Reuse Conversions: Maintenance and Site Conditions". Not sure which one of you want to go first.

Katie: ([Denver Water, Denver Parks, Denver Environmental Health Data Currently Available and 2016 Data Collection Efforts](#))

Data collection efforts for Summer 2016, Denver Water doesn't really have anything besides wrap up the CSU Study. Deb sent over all the data she had for parks some of the stuff they do is on-going. The stuff for Environmental Health they measure like once a year.

Lisa: I know you all just got this information today. Do you have any questions?

Brenley: I just have a comment. David sent over an email with some questions about the ability of Denver Water to sample. We will look into this internally to see what can be done. I just wasn't sure where this would fit on the agenda.

Lisa: So internally you have been talking but there hasn't been any decisions.

Brenley: Just wanted to bring this up to the group. We will have more complete data by the end of the September.

Lisa: I guess when you get into small groups you can talk about it. What Denver Water can do or plan? We won't have all details worked out.

David: What we talked about was the analysis of the water. What we were getting at was the changes in the lakes. The recycled water is pretty well understood as long as its in the purple pipe. How many times a day it goes in the pipe? The two exceptions would be Wash Park and City Park. In the diagram it shows how complex these two systems are.

Scott: Before we split into small groups, I want to talk more as a big group about some option. I would actually like to know more about what Denver Water can test.

Brenley: The thought was to sample three locations: Wash Park, City Park, and Denver Country Club (but we have to get permission). We would like to sample once every 2 weeks, we have ran this by our laboratory staff to make sure they have the appropriate resources to go out and collect the samples. They will take it back to the lab and do the analysis and provide us the data. We have put a list of

perimeters that we think should be sampled for together we can send that around that was our preliminary thought to introduce this to the group have the data by the end of September. We would like to start sampling in June until September and sample every two weeks we have a data set for the summer. We would also like to see how things change after a storm we would to sample then as well just see if any changes. This may not always happen but it will be one of our goals. Just want to see if there are any impacts from the storm.

Lisa: Are you looking at new trends, is there a short list?

Brenley: Yes I have a list. I wanted to run it by the group to get some kind of consensus based off what our plan was.

Jay: During what time period would you be doing the testing?

Brenley: June-September and sample every two weeks.

Sonia: Is there any budget restraints?

Brenley: Because we are doing it in house we have the capabilities and should be ok with our current list. If we were to send the samples to an outside lab then we could have run into some budget constraints. For now this is a special project we are doing with our laboratory staff. For long-term I can't say, but for short-term this is what we have for the summer season.

Cindy: I'm really excited about this. As one always wants more, I'm wondering if it is possible to test in January-March before it freezes over? I know the water is turned off in October. I'm not sure if it's important or not but it has interest to me if anything changes.

Lisa: So what I'm going to do is add this to the long-term list.

Mark: I'm just going to throw this out there. Cindy if I understood your question correctly. I think it might be a good idea to sample right before the irrigation starts back up in the spring. But not necessarily November, December, or January.

Cindy: I support that 100%.

Brenley: That's a good point. It seems like a reasonable request I will just have to check with them to make sure they can do it before April 1st.

Scott: What we can also do to establish this if Denver Water can't continue do it we can hire contractor to do the sampling for us.

David: This is a non-steady stage environment.

Brenley: This is something we can look at long-term. For example: If we would like to have annual report with data for x,y,z if we can do that internally then we can work on establishing that but if it's something we have to contract out we will look at that as well.

Lisa: We can put those on long-term strategies at least for the summer but that is what they're going to put forth, does anyone have a problem with that?

Mark: Russ can you compare what is coming out of the purple pipes?

Russ: Yes

Mark: That's a good idea. Comparing and understanding the differences.

Scott: I want to say thank you that was awesome.

Sonia: In regards to the first item on the sheet about CSU Study about the report coming out (that's good). Sometimes in final reports they don't have all the details. Rob in Forestry which trees will be studied?

Brenley: This is just really a snap shot of what tree tissue samples were collected. I think what we will see is what trees were sampled, when, and when.

Lisa: So they took tree samples but it wasn't part of the CSU study.

Brenley: I thought it would be a good opportunity to get more data and look at the data for long-term. It will be helpful to us to look at the data gaps.

David: Do you think we can tell which trees were from Wash Park and City Park?

Brenley: Yes, I think we will have that.

David: When do you think it will be available?

Brenley: Mid to late Summer.

Mark: Say we sample every two weeks and we have irrigation water go into the system. Does PH level/salinity have a negative impact on those trees or do we need to have something that is measurable on-site. I'm trying to figure out how we have a solution. Does that make sense?

Rob: I will be sampling 16 trees in Cheesman Park. I will be looking at doing other areas as well. I will be testing some pines in City Park and Lowry I will try to do this Spring. One problem is with one species that is very different than the others it's the ponderosa pine. The indicators to me in certain species what are their sodium chloride level because it starts to build up and the tree declines. The tricky part is with the ponderosa's they all don't go at the same time.

Steve: Data gaps in the soil sampling. Environmental factors direct correlation such as water quality and tree quality.

Lisa: What do you mean by Environmental Factors Direct?

Steve: Such as: polar vortex. In November of 2014 the temperature went from 66 to 37 degrees in a short period of time. We were wondering if some of the species were struggling going into this weather event. One thing you could do is get a spad meter you put a leaf into the meter and it reads it.

Brenley: Is it small?

Steve: It's about 6-8 inches long.

Lisa: Deb do you want to go over your handout.

Deb: [\(DPR REUSE CONVERSIONS: Maintenance and Site Conditions\)](#)

We put together a reuse conversion list (see attached handout).

Scott: The aeration system is already in place at City Park (Duke/Ferrill lake). The plan is to start aerating Smith Lake and add additional aeration to Grassmere we will see if we can get that done this year too.

Brenley: We should definitely note the operations on what we are doing on each site include dates and times so we can see if there are any changes.

Scott: Ok

Brenley: Question for Deb or Rob: I was just wondering if Deb or Rob had any experience with sulphur burner?

Rob: Out in Westminster I know that the Heritage Golf course had moved to using a sulphur burner, but I wasn't there long enough to determine if they found it to be effective. There were very few sensitive conifer species on the course, so the burner was implemented with a turf grass focus.

Scott: Here at City Park we use copper sulfate because the algae gets really bad. We are trying to the aeration to see if that will help.

David: Deb thank you so much for putting this together for us. This is a good guide for all of us to understand. One other thing I wanted to ask about was we talked about this at the last meeting about the injection system that has to meet the federal regulations, where does the chlorine go back into Wash Park?

Lisa: Dechlorination

Russ: It's sodium by sulfate it takes out the chlorine. We cannot discharge chlorine into the water it's against the regulations.

David: So sodium by sulfate has to be injected in the recycled water in order for it to go into the ditches.

Scott: I was going to ask Rob is there some parks that you wanted to start testing. Can you put together a list? I'm sure you're going to want to start quickly.

Rob: For short-term it would be nice to get some recommendations from this group.

Scott: You mentioned: City Park, Wash Park, Lowry (were already doing Cheesman).

Rob: Verbena

Scott: You're the expert and tree guy so if you can put together a list. The trees at doing pretty well at Cheesman Park.

Rob: Ok

Katie: I think you said you wanted to test at potable sites.

Rob: At the City of Westminster we tested potable and recycled sites. The problem was some conifers were dying and others weren't. There were cases where the same exact species were next to one another, but one would have much higher levels of sodium and chloride in its needles, while its neighbor would not. Trees in poor condition were consistently found to have higher levels of sodium and chloride in their needles.

Deb: I would like to suggest we go some soil testing on those sites.

Brenley: Another thing to look at is the water budget for each site to see how much water is being applied.

Deb: We have that information already.

Lisa: Do you want to stay in one large group instead of breaking out into smaller groups? (Agreed to stay as one big group)

Brainstormed Short-term data and mitigation strategies for this summer(The Technical Working group will refine these strategies and do a reality check):

1. Denver Water will conduct lake water tests (June – September 2016)
 - Will compare the results with water from “purple pipe”
 - Will do test every 2 weeks and will coordinate timing with Denver Parks operations activities
 - Brenley and Damien will take the lead to coordinate

2. Denver Parks will take tree tissue samples with soil samples
 - Will look into practicality of including Cheesman, Wash Park, Lowry, Verbena with comparison potable water parks (Montbello?)
 - Samples will be taken away from roads
 - Rob will take the lead

3. Soil composition will be tested by Denver Parks
 - Test should include composition (biocarbonates, soluble sulphur, SAR/ESB), density and base saturation
 - Test different location in all reuse parks by the tree (for tree tissue sampling)
 - Test should be one meter
 - Deb and Russ will coordinate with Steve, Brenley (with Bauman S)

4. Develop irrigation strategies to avoid spraying of needs
 - Scott will check about any changes/modifications in process

5. *If feasible*, have control groups for each strategy (controlled experiments)

6. Inventory supplemental potable watering for irrigation in Wash Park
 - Rob will take the lead

7. Consider leaching with recycled water (long-term?)

Next Steps: Brenley will set up technical group within the next two weeks to coordinate the strategy above with those listed.

Bin of Long-term Ideas

- Can Denver Water test lakes before irrigation begins in the Spring?
- Denver Parks can look for a contractor long-term if Denver Water cannot support this activity
- Add additional “Fertigation”
- Have control groups for each strategy (controlled experiments)
- Consider leaching with recycled water