Sand Lake Community Council
Special Meeting Minutes

August 28, 2017
Sand Lake Elementary School
54 in Attendance

Note: Effort was made in these minutes to include the names of speakers that introduced themselves before making a comment or asking a question. Those that did not provide their name before commenting are represented as "SLCC Attendee" within these minutes.

Meeting called to order at 6:36 by SLCC President Nikki Rose

Welcome and Overview:

- Tonight there is just one issue on the agenda. Before we get started though, please take a look at the draft of the Jewell Lake Park Resolution that is in front of you. We approved it at the May meeting and will be forwarding it on.
- Both the Jewell Lake Park trash pickup and the community picnic went well. There were about 100 people at the picnic. There was lots of wonderful food, music etc. Thank you to everyone that attended and the sponsors that helped to make it possible. Thanks to Senator Costello for donating as well as Representative Grenn and Representative Claman as well as several local vendors.
- Patriotism Moment – Pledge of Allegiance

***Hans Rodvik motioned to approve the agenda. The motion was seconded and passed by unanimous consent.

Westpark Community Aquifers & Wells

- Presentation by Jim Munter

Note: Large amounts of scientific data, figures, and tables were provided in this presentation. Effort was made to capture salient points though the entirety of the presentation is NOT included here.

  - Map of lots served by public and private water were displayed. Munter has been involved in studying several of these areas. An event occurred long ago in a place called Dodd's well. An affidavit from Dodd indicated that the well water turned a similar murky color as a nearby waterbody not long after a significant rainfall event.
  - Several important key points were made. In the mid-1970s, up to four families were using the well for 10 years. Developers discovered high grade gravel in the area and they dug a pond. In 2-3 weeks there was sediment in sinks and bathtubs. The families thought the connection between the cloudiness and the gravel mining was evident. The timing was very important. Things were then quiet until 2004 following the mining activity. In 2004 Westpark became developed. In the fall there was a large storm and sediment controls

failed. Sediment laden water filled the pond for a second time. The University of Alaska Anchorage did a report on the hydro geography and released in 2004. Betty Dodd showed up with two filters in a bag showing the first plugging of filters since the 1st rainfall event. This caught Munter's attention as it was similar in each instance.

- There has been some question over time about whether silt can flow through an aquifer. A picture of Mammoth Springs, WY was shown to describe that it is possible. The USGS studied the aquifer with a dye and it traveled 1.4 miles in an upgradient direction. In less than a day the dye showed up in the pond. They had 8000 ft per day groundwater velocity. It was astounding. Dye studies are accepted as a means of studying connectivity.

- Discussion of pore sizes with diagrams. Fine sand can go through gravel. Gravel pores are around 400 microns. Sand is smaller and silt is smaller. Viruses and bacteria can go through aquifers. They are smaller than the pore sizes in sand and gravel aquifers. Humans have been disposing of waste water in various places and you can find it downstream. Silt is between 4 and 70 microns.

- Transport of viruses and bacteria can occur in sand and gravel aquifer. Average distance is 500 meters that bacteria could flow; this is twice as far from pond to Dodd's well. The literature shows particulate matter can travel through aquifers a considerable distance.

SLCC Attendee: Is there a temperature gradient needed?

- No. There can be a slight effect but not much compared to grain size features.

- In anchorage there are several layers. When you get to south Anchorage it is a little different as the confining unit is close to the land surface. In Bootlegger Cove there are transitions. Maps presented.

- In eastern portion of Bootlegger Cove there is silt or clay. It provides a confining layer to sand and gravel unit. There is a lot of relief on that aquifer. This is nothing new, it has been known. Its called an unconformity. It was there before other sediments were laid down on top. The slope is about 10% on one part and this is pretty steep.

- At the Pt. Woronzof area there is a confining layer and a transition zone. What we have been studying is in transition zone and it is very complicated. There have been several rounds of studies. Munk et al. 2010 is one of them. We drilled nearby Dodd's well with good control in ours.

- On the cross-section we see the pond and confining layer and various aquifers below it. SL2 is one we drilled and it went to the deep aquifer. We drilled a shallow well too. In middle we found one that correlates with Dodd's well. Dodd's well went through a lot of silt. How can you get sediment through 100 feet of silt? It is a good question that people have. But there is the smoking gun. KE22 well was drilled and hit the aquifer at a shallow depth, 25ft of silt. There is a straight shot without silt layers between the pond and Dodd's well. How can you have a slope of 100ft over that distance? Its an unconformity and it has slope. This pond when dug didn't encounter much silt or breached through it. It got into good sand and gravel. Its not economic to drill a bunch of bad silt. You might get pore spaces of 400 microns in this material, it's not unreasonable.

- There was another clue too. We drilled SL6 to run the aquifer test. We want to know how permeable, how fast, and how much connectivity. We monitored SL4, KE22, SL2 and a few other wells. We pumped it last spring at 400 gallons per minute – the biggest we could get in there – for 24 hours. Here are the records. The vertical lines represent one day and go up and down – a classic tidal signature. All wells have connections to Cook Inlet, sure enough. We ran the test. There was immediate drawdown in four wells with tital signatures. More drawdown but not a lot. When we quit pumping, it went up. This was the signature of a response. Wells were a quarter mile away. There is an indication that these wells are connected somehow.

SLCC Attendee: Did you pump water back into the pond? Wouldn't this cause the same results?

- Good question. These are deep wells. The amount we put in was spread over the whole pond. The amount in the pond was small compared to the draw down. This is not a perfect test. That is something you try not to do if you think there is going to be an effect. We had different responses. May be a factor but is not a driving factor.

- I went through and calculated velocity; how long to get between locations. It was 100-600ft per day for conductivity and effective porosity was 0.25. About 9-55ft per day for a slug of groundwater. If you go to the affidavit that showed 48-49 days. This is a ballpark calculation but stuff is lining up. You need a bunch of pieces of data and they are lining up.

- Others have investigates this. Kane et al. 2008 is one of them. Their cross section didn't go through the pond. They didn't have KE22, the smoking gun. They didn't get access to it. PW24 is Betty Dodd's well. It is not in their cross section either. They made some conclusions without the data they would have liked to have had. They said in the text that not enough data was available for detailed stratigraphy. They had limited budget, limited time, and didn't focus on the Dodd's well. They didn't show the hydro of the pond or the Dodd's well.

- Kane et al. 2010 mischaracterized the gradient. Their opinion was that this was not physically possible to transport sediment through the aquifer to the well because of distance. But this isn't a definitive factor. They assumed scattered layers of fine material. Other wells had lots of fine material. The hydrologic gradient was said to be low. Even with their data, the gradient was big! I'm not buying that one. The State of Alaska provided funding to DNR for this with pass through to UAF.

SLCC Attendee: What are the parameters for the testing? Why did they leave out all the other wells?

- Their proposal was accepted and they followed it. They took 86 water samples and looked at the wells etc but they didn't zero in on this little area in question. They had two fatal flaws. They said there was no alternative explanation but there was. They didn't really figure out the groundwater flow. I think their opinion is not supported and is out of date.

- Munk did an earlier study in 2004. This group concluded that it was likely mobilized near the well opening but there is considerable uncertainty. They offered several possibilities for how it happened like perforated casings, back surging of water, earthquakes, vehicle traffic etc. I think this is all speculative, that none are persuasive and that not explain the timing.

- The main problem is that it doesn't explain the timing of the 70s event. It doesn't accommodate the second occurrence in 2004 because it hadn't happened yet. KE22 was drilled afterward so they didn't have access to it. They didn't consider the presence of tritium that was found in the Kane study later. They didn't know about last year's aquifer test. My conclusion is that their finding is out of date, inconclusive and should not be relied upon. We can't just point to Munk.

- In 2010 Munk got another shot at it all with me and others. Aquifers appeared to be susceptible to surface contamination and efforts to avoid or minimize future contamination of these aquifers are warranted. Some decision makers decided it was okay to keep pumping groundwater into the pond. You all came here so that's a positive no matter what has happened.

- In conclusion the transport of sediments to Dodd's well is possible as a result of several known variables. I don't live in a world of engineered filters. Huston shows rain in one event can be astounding. Not all can be predicted. Look at the Exxon-Valdez oil spill or the 64 earthquake. Dinosaurs on the North Slope? Who would have thought? I have seen aquifers affected two miles away on the other side of a river. If you have a couple explanations, the simplest is usually the way to go. Mining in a gravel pit caused sedimentation stands a good chance of being the right answer.

- In the 1970s the Dodds went to the city and said don't give out a permit, they'll mess up the wells. The city required the gravel pit operator to install filers on the Dodd's wells. Once they did that they got a permit. They were going to send a floating dredge! Betty said it is still there at the bottom of the lake.

SLCC Attendee: Do we need a fluorescein dye test? Would it help decision makers decide that this needs fixed? Would get cat pea, dog shit, everything else….

- There are a few complications. Fluorescein is a dissolved substance. Even if it show up there might be some doubters about contaminants. There are about 40 wells on the south, southwest, and west side of the pond. There would need to be some public outreach about what happens if their water turns green. There probably need to be permits from the DEC. The substance is called nontoxic and approved for use in some instances. It is possible that it wont show up if not enough is put in, if it breaks up in the sunshine, if it takes too long to get to wells and they conclude the study prior. I think it would show up and help convince people that the wells are vulnerable. That it could be a source of contamination. In this case, if it shows up we can ask to send that storm water somewhere else.

SLCC Attendee: Is there another dye?

- I think that's the best. A couple 1000 bucks worth of fluorescein. If you want lower detection levels than color you can get instruments to detect.

SLCC Attendee: Water runs downhill. Underground it may do different things. Backing up to the seashore. In California water bubbled out of ground with soapstone. Could drink it all day and wouldn't quench thirst. It was in water.

SLCC Attendee: Two concerns. Not a perfect test of pumping water into pond when you're looking for

the signatures. The other is that aquifers are connected to Cook Inlet. Could the well be affected by backflow from the ocean?

- The answer is that I don't think so because heads are consistently above sea level. If there was saltwater it would show up in all tests that were done.

SLCC Attendee: How much would fluorescein cost?

- About $2000 plus shipping.

SLCC Attendee: Why hasn't it been done before? Who would permit it?

- No one has lit this fire under the municipality. Kane thought about it but said the wells were too far away, but it was done in the USGS study. The muni would need to permit it; they own the land and the pond. Their phone number would go on all the door knob fliers. The DEC would need to be contacted and you would need their blessing. I think that is all that you would need to do. I would probably also ask a few other places.

SLCC Attendee: What is toxicity of fluorescein dye?

- It is relatively benign. It is not like cool aid. Studies have shown not very toxic.

SLCC Attendee: During the last two major rainfalls, the water has flowed into the aquifer. One year ago the company was looking at an overflow and that caused angst that we have seen it from the north side. Currently straw bales and black sheeting is not protecting the water I am drinking. If fluorescein dye has to go through DEC… We allow all this flowing material. There are photographs of what is flowing into the pond. It is usually clear but after storms like those recently it hasn't been. This is year 17 we have been talking about this.

The system activated this year and last. There was damage to control structures both times. It is not secure. It is not as protected as people think it should be.

SLCC Attendee: Filter solution is temporary at best. Even if temporary it doesn't seem to be working. Urban storm water should not go into a drinking water source. Maybe Anchorage should put this in all the city wells…

SLCC Attendee: Eklutna is a reservoir. Why wouldn't this be called a reservoir? If drinking water, it's a reservoir. A fellow relieved himself in reservoir in Portland and they drained the whole thing.

- Excellent point.

Claire Lewis: Thank you Nikki for having a meeting and to the congressional leaders. The conversation taking place is because in July last year Jim [Munter] expressed concern about the August 8 event. Most people on wells didn't know their aquifer was potentially at risk. Before construction we told them we wanted our water to be safe. I requested Nikki have the muni here tonight. Croft is here so thank you. A muni letter to a resident said in rare storm the system would be activated. The real issue is that the muni presented three solutions at our meeting. We are upset the muni did this in the first place. It is a shame they are not here. Questions were raised at the July 25 meeting. This is a serious issue. Someone's well is affected. As a neighbor and member of community council we don't want that. Where is Hultquist and White Raven in all of this? Frank Rast is worried about taxes and I am too. Why couldn't we cap the

bypass and go from there.

Eric Croft: I thought muni would be here. I talked to them today. Today they sent a letter to the developer and said that the system doesn't work in the way they described. We knew this months ago. It was the rain the last couple of weeks; there were two events. They said you didn't build it the way you designed it or way you designed doesn't work. How do we solve the question of how it effects the well water? Munter has done fabulous progress. There are a lot of lakes around Anchorage. I live near the lagoon.

SLCC Attendee: It is not a lake it is our drinking water.

Eric Croft: I am on well water where I am. We have to realize this is not a filtering pond. It is a different system. Where there are lakes with lot of sediment it filters it, but this is very different from mine.

Jim Munter: University Lake is an old gravel pit. It is big. Underneath it is the Bootlegger Cove clay and silt there. So most wells are sealed and protected. Out here you should assume it's a sieve.

Eric Croft: Proving this concept is what I'd like the council to help us do. I am fighting to say this is a different type of aquifer.

Jim Munter: The roadmap is this and has been proven. In 1970s the muni agreed with Dodds. They made the requirement that satisfied everyone. Now that things have changed, why did they change their mind? There is no analysis that anything is different, just the people there. They haven't been there very long. Kent doesn't know anything about what had gone on. These events go back before those people were there. They should dig up the records.

Eric Croft: There is a letter right now. We are still under the warranty provision so they can say "fix it." That doesn't solve the proof that it has a direct impact.

Jim Munter: That's where the fluorescein dye study comes in. If they believe it is sealed, go turn it green.

Eric Croft: I would love that if we could do that. Have the people look for that. To say we did our own test and it only cost $5k. Here are the 20 people that said "here it is." I don't know how to do that with DEC or whoever but I think we should once and for all answer if it is a filter or a conduit.

SLCC Attendee: In 2004 there were horrendous storms and the pond turned crazy colors. There were lots of complaints. The same color in Dodd filter was the color in the pond. The study has been done by nature.

SLCC Attendee: Are the test wells monitored continuously? What cost would monitoring add to try to find the hydrologic path?

Jim Munter: Most have been sampled multiple times but they don't give a bullet proof answer to these questions. They help flush out around the edges but it doesn't help with the problem talked about.

SLCC Attendee: If you stand on SL road and look toward Dodds, topography shows it wasn't exposed in the 1950s. They have dug down. Lakes take millions of years and filters. This was man-made. In the early 2000s we asked Hultquist if we could go in for a dye test and we were denied access. The muni is

required to follow their water regulations. To expose us falls on the muni.

(APPLAUSE)

SLCC Attendee: I have been coming to SLCC since 1982. I'm not on a well but I remember when they were filling in the pit the city acknowledged it was an aquifer and they were going to require the developer to have water go to inlet. All of a sudden they are denying it is an aquifer. Eric, maybe you have a better idea. Is there any way to get them to acknowledge what happened before?

Eric Croft: I haven't found any of that in writing. Does it link as an aquifer or not is the common question. In UAF study it is inconclusive and doesn't seem to. Your points about why the muni ignored certain things are well taken. The studies have been inconclusive. I think this is a different thing compared to other places in Anchorage. I think filtration systems are okay if they are adequate.

*** Motion by Bob Crockett to address the resolution. Seconded by Lynn Crockett. Passed by unanimous consent.

Nikki Rose: We wrote this back in May and June. *Reading of resolution*

SLCC Attendees: Three friendly amendments to the resolution:

- Line 18 insert "and constructed" after "designed".
- Take out "newly constructed" on line 17.
- Add "current and" before the word "future" on line 18.

Nikki Rose: Is the committee okay and the Board okay with these friendly amendments?

Claire Lewis: I cant speak for the entire committee. Is everyone here okay with this?

Nikki Rose: Hearing no objections, the amendments are included.

***Vote on resolution. All in favor – 51. All opposed – 0. All abstained – 0.

Nikki Rose: The next meeting will be Sept 11 at Sand Lake Elementary at 6:30PM. We will hear from several speakers. We will be voting by mail come April. We will discuss the upcoming year.

Allen Thornhill: I have a lot of concerns about city re-platting 42 acres at the old school site. There is another opposite the pond. A company is up there digging for new housing. I want our representatives to stop further flow into the inefficient drainage system.

(APPLAUSE)

Nikki Rose: Liquor licenses info will be at front.

***Mike Rose: Move to adjourn. Seconded by an SLCC Attendee.