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June 12, 2019

VIA EMAIL: council.comments@slcgov.com
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Re: Is Moving the 4th Ave Well a Feasible Alternative?
General Comments to the Salt Lake City Council

Sirs:

On June 4th, the Council informally requested that the Administration prepare a report addressing alternatives to the Department of Public Utilities (“DPU”) proposed 4th Avenue and Canyon Road Well.¹ This letter identifies key decision making points concerning the feasibility of moving the 4th Ave Well to a new nearby site as reflected in prior documents and meetings regarding the Well from the viewpoint of this Avenue resident’s viewpoint. Reference is made to the “pro and con” analysis in the agency’s consultant report by Hansen, Allen and Luce at pages 9-11.²

1) The Administration’s planned alternatives report should be an engineering “can do” document and not an engineering “can’t do” evaluation.

If the Administration’s planned alternatives report which will be primarily prepared by the proponent Department of Utilities is simply going to be a recitation of the agency’s conclusions in prior public documents, it will not be helpful to the Council’s decision making

¹ “As part of the unresolved issues discussion, the Council discussed the associated infrastructure located approximately at 4th Avenue and Canyon Road. The well serves as a critical water supply for downtown. The Council unanimously asked the Administration to come back to the Council with alternatives addressing and incorporating community concerns such as building size, impact, and noise. The Council also supported funding an outside engineering resource to review possible construction alternatives and to report on the incorporation of public feedback.” RDA Board and Council Meeting – Recap for June 4, 2019 (<https://www.slc.gov/blog/2019/06/04/council-june-4-council-and-rda-board-meeting/>).

² Memorandum by David E. Hansen, Hansen, Allen and Luce, Inc., to B. Stewart, Salt Lake Department of Public Utilities, re: 4th Avenue Well Assessment (hereafter "HAL Report") at 15 (url: https://docs.wixstatic.com/ugd/80b28b_3607f771b2984d63a44ce7a4c3d1c7a9.pdf).

process. The DPU's has proposed the most cost-efficient engineering design,³ but that may not be the most socially optimal design for the City.⁴ The DPU's engineers are ethical, highly skilled professionals who are obligated to provide unbiased advice.⁵ There is a hypothetical risk here that the agency's views will be unconsciously biased by a desire to anchor the public debate close to the proposal that it has been pursuing for a year.

It is important that the alternatives memorandum give a fair independent engineering evaluation of alternatives. It should be an engineering "can do" document and not simply a repeat of the agency's prior "can't do" conclusions. In the event that the report is a "can't do" recitation of prior conclusions, the Council should remain open to "funding an outside engineering resource to review possible construction alternatives"⁶ in order for the Council to obtain the best advice.

A "can do" engineering report evaluating moving the Well will undoubtedly conclude that that alternative will be more expensive and will take more time to construct, as the HAL Report does.⁷ As noted below, there is a sufficient funding stream and alternatives could be found to pay more – the stasis of decision is whether the Council will fund constructing a water treatment facility that is worthy of a great United States city or whether the facility will be done on the cheap and to the detriment of property values of the immediate surrounding Memory Grove residential pocket homeowners, to the non-economic detriment of benefit of general City park users, and to the future public safety of City residents during a future flood event.

The further Administration Report should fairly present the best estimate costs of various options. The conclusion of which option is reasonably, socially and-or economically fiscally responsible should be left in these premises to the Council.⁸

³ Memorandum by B. McIntire to K. Lindquist, Salt Lake City Planning Department dated August 30, 2018, re: Open House Public Comment Responses (hereafter "August 2018 Comments") (url: https://docs.wixstatic.com/ugd/80b28b_0bc4214b1c61450897cfbd5cc5a0e6ee.pdf). "The design which was submitted in the Planning Application was arrived at because it is fiscally responsible . . . SLCDPU is held accountable by all of its customers and the City Administration to be fiscally responsible" (*id* at 1-2).

⁴ Your commentator disputes the current DPU design should be considered the cost baseline. Your commentator contends that the DPU has omitted the important element of a three foot or higher flood protective wall around the chemical treatment plant required by state drinking water regulations. A more realistic baseline design would cost more than the DPU's current \$3.6 budget request. The protective wall was in the DPU's August 2018 version; but then was deleted.

⁵ As I have separately related to the Department, the civil engineering and related professions within and that consult with the Department deserve all City residents' highest esteem and gratitude. The complex engineering marvel that is our City is a result of their expertise and professionalism.

⁶ n. 1, above.

⁷ HAL Report at folio page 15.

⁸ n. 3, above.

2) Preserving the valuable asset of the Well's production is a key decision making factor.

As noted in a previous comment, the maximum future economic value of water to be sold from the Well over a 75 year time horizon is about \$325,000,000, undiscounted to present value, and about \$84,000,000, discounted to present value.⁹ Between 80-100 percent of northern parts of the downtown summer season water comes from the Well.¹⁰ Depending on the mode of moving the chemical treatment facility to a new nearby site, there may be no impact of the current production if a transmission line is constructed from the existing well site or there may be a contingent risk if a new well borehole is constructed at a new site.

3) Risk to Well Productivity from Drilling a New Borehole.

The HAL Report identifies this risk with a weight towards the view that boring a new well would have a moderate or high risk that the newly bored well might not be as productive. During the May 9, 2019 DPU open house on the Well, P.E. Hansen orally stated to me that wells might be drilled within a 300 foot radius and might not be as productive. This concern is repeated in the Bowen First Memorandum of August 2018.¹¹

On June 5, 2019, I attended the regular monthly open-community meeting of the Greater Avenues Community Council. That meeting was attended by Genevieve Atwood, a geologist and former head of the Utah Geologic Survey. Although not a hydrologist, Ms. Atwood reported that she consulted with her former hydrology-geologic colleagues. Those unidentified experts informally commented that the aquifer was broad at the mouth of City Creek Canyon. Accessing an equally productive nearby site was likely. Obviously, this third-hand report has less weight than the HAL Report's conclusion. This conflicting hearsay report provides additional back-matter supporting the Council's decision to request a further review.

Your commentator, who does not have construction, hydrology, or drilling expertise, feels that improved drilling technology can significantly reduce to eliminate the risk to well productivity, if it is necessary to drill a new borehole. Since the 1990s, horizontal borehole and horizontal drilling has significantly matured. Horizontal borehole and horizontal drilling technology using optical gyroscope navigation can place the end of a new borehole within 2% per 1,000 feet of drilling distance of the existing borehole. A borehole can be placed, again at a greater expense, within feet of the existing take-off point in the aquifer.

⁹ Fisher Letter-Comment dated June 8, 2019.

¹⁰ McIntire August 2018 Memo. at 1 ("Northern areas of downtown receive 80-100% of their water from this well in the summer months.").

¹¹ Bowen, Collins and Associates, circa August 2018, re: Salt Lake City Planning Commission Assessment Memorandum (hereafter the "Bowen First Memorandum") (url: https://docs.wixstatic.com/ugd/80b28b_0e07c5f9e8ff4047a4bd9405ee4d95cf.pdf). "[T]here is always the risk of what yield the City would get with drilling a well in a new location. The existing well produces approximately 4,000 gpm. There is no guarantee that relocated well could provide a yield of 4,000 gpm" (*id.* at 4).



Figure 1 – Horizontal Borehole Drilling Rig and Directional Drilling Diagram. Wikipedia.

4) Risk to Well Productivity from Extending a Transmission Line from the Existing Wellhead to a New Site.

There is no risk to existing production from this option. There are engineering challenges. The main implication of this option is the added effort to route a transmission line around many subsurface interferences in the area. The main 1908 City Creek entombment conduit is a few feet from the existing well head. It may be necessary to build a small above ground pump house and pump at the existing well to draw the water to an alternative location.

The HAL Report comments that this option “[w]ould involve new pipelines and traffic disruptions” and that the “new pipeline would have to connect with existing pressure system.” This was consistent with P.E. Hansen’s oral comments to me during the May 9, 2019 open house – there were underground interferences, but they could be overcome with difficulty.

An August 2018 DPU staff report by DPU P.E. McIntire describes the many nearby subsurface interferences.¹²

5) The Point of Required Chlorine Injection is Unclear and Affects Whether an Initial Well Water Lifting Pump can be separated from the Chemical Treatment and Water Pressurization Pump House.

The McIntire Report dismissed a long-transmission line from the existing line to a relocated chemical treatment facility on the grounds that “The chemicals must be injected into the well water at the source to achieve the correct dosing and contact time.”¹³ The McIntire Report also objected to an interim transmission line on the grounds of cost¹⁴ because it would involve building two water pumps – one to lift the water from the existing Well borehole and a second at a separate chemical plant to raise water pressure before injection into the distribution system.

Your commentator, who again is not an engineer but a lay citizen, could find no regulatory reference supporting the contention that injection must occur at the well head. Utah

¹² The McIntire Report, n. 3, above, at 3.

¹³ *Id* at 1.

¹⁴ McIntire Report at 2 (“Both options would require property acquisitions, extensive piping, and duplicate pumps and above ground structures.”).

Admin. Code. R309-505-7¹⁵ requires that low quality water must be treated at some point before it is injected into the primary distribution system. The regulation does not appear to prohibit interim transmission for 1,000 feet before treatment at a separate chemical facility as long as the water is chemically treated before injection into the pipe distribution system.

This is a review point that the future administration report might address.

6) The Claim that there no Available City Owned Land or Private Land Nearby appears Incorrect.

The McIntire Memorandum concluded that there is no available nearby City owned land and that no private land is available.¹⁶ The DPU took no steps to investigate the availability of nearby private land, but assuming that there was no land (*id*). The HAL Report makes reference to available land at the “Old City Hall Building north of the well” (*id*. at 5).¹⁷

The DPU’s decision to not consider examining nearby properties may be a hasty generalization based on the agency’s prior experience. The DPU’s application to the Historic Landmark Commission¹⁸ indicates that one-quarter of an acre is involved in their pending special use exception application, but that the footprint of the current proposed design requires only one-eighth of an acre.

Figure 2 show several parcels to the south of 200 North Canyon Road near State and North Temple per the Salt Lake County Assessor’s Office.¹⁹ Table 1 describes those parcel and Table 2 estimates acquisition costs based on assessor records. Parcel A is owned by Salt Lake City Corporation and has no cost. Parcel “D” is owned by the Church who might be approached to donate a portion of their land’s values considering their extensive experience. Although Parcel “B” is privately owned and its irregular shape lends it to be desirable for a developer to sell. Parcel “E” is excluded as a possible alternative because its size is insufficient to accommodate a one-quarter acre facility.

¹⁵ url: <https://rules.utah.gov/publicat/code/r309/r309-505.htm#T7> .

¹⁶ “There are no available parcels in the immediate vicinity. In order to provide the same function, a new well would need to be located within the same neighborhood. A property acquisition has not been considered by SLCDPU because it is cost prohibitive and there is no indication that any nearby properties are available” McIntire Memo. at 1.

¹⁷ Your commentator is unsure to which property the HAL Report is referring too.

¹⁸ DPU Application to the HLC in Attachment “C” to HLC Briefing Materials at folio page 5 (url: <https://www.slc.gov/boards/historic-landmark-commission-agendas-minutes/>). As of June 6, the Briefing Materials are no longer directly accessible by the public.)

¹⁹ Salt Lake County Assessor (url: https://slco.org/assessor/new/javaapi2/parcelviewext.cfm?parcel_ID=&query=Y).

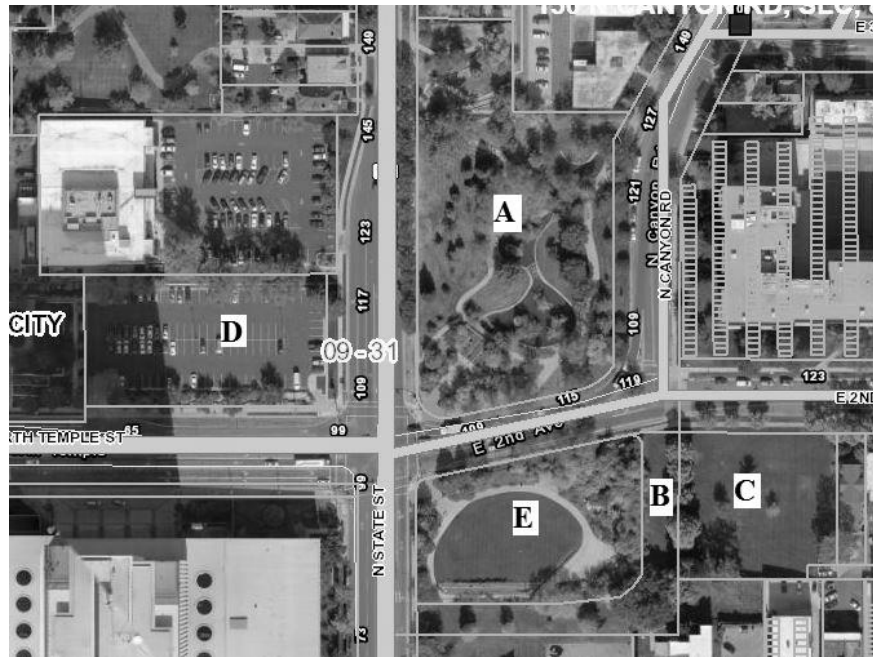


Figure 2 – Assessor Parcel Map Near North Temple and State Streets

Map Id	Assessor Parcel Id	Address	Owner	Assessed Valuation	Acres	Assessed Per Acre
A	09313530290000	110 N State	Salt Lake City Corp.	2,006,000	1.87	1,609,840
B	09313540090000	78 N State	Property Reserve, Inc.	741,000	0.46	1,610,870
C	09313790260000	124 E 2 nd	Property Reserve, Inc	1,079,000	0.67	1,610,447
D	09313510210000	61 E North Temple	Corp of PB of Ch JC of LDS	2,778,000	0.95	2,924,210
E	09313540080000	115 E North Temple	Corp of PB of Ch JC of LDS	1,852,300	1.00	1,852,300
Average						1,921,533

Table 1 - Summary of Nearby Parcels

Table 2 - Estimates of Acquisition Cost of 1/4 and 1/8 acres

Map Id	Assessed Per Acre	App. Acres	Purchase Cost	One-Half Purchase Cost
A	1,609,840	0.25	0	0
B	1,610,870	0.25	402,718	201,359
C	1,610,447	0.25	402,612	201,306
D	2,924,210	0.25	731,053	365,526
E	1,852,300	0.25	463,075	231,538
Average	1,921,533	0.25	480,383	240,192

As shown in Table 2, the DPU's conclusion that no property is available or could not be purchased at a reasonable price appears to warrant further review in the future administration report on alternatives.

7) The Well Water may not Require Chlorination as a Matter of Law. Chlorination may be Discretionary.

The Memory Grove pocket residents argue that chlorination is not required.²⁰ The question of whether chlorination is mandatory is governed by Utah State Office of Drinking Water regulations. A May 22, 2019 letter by the State Office of Drinking Water states that the "Division *requires* a detectable free chlorine residual . . . where treated surface water is present" (emphasis added).²¹ DPU memoranda also recite this conclusion.²²

Utah Admin. Code R309-505-7 expressly requires "low quality water" to be chlorinated if connected to a public water distribution system that contains treated surface water.²³ Utah Admin. Code R309-505-8 does not require the chlorination of "high quality water" and does not appear to expressly require, as compared to R309-505-7, chlorination when a "high quality" water well is connected to a public water distribution system containing treated surface water.

The Bowen First Memorandum notes that "It is our understanding that the water obtained from the 4th Avenue Well is sufficiently high quality as to not require direct disinfection or other

²⁰ Resident presentation at Greater Avenues Community Council June 5 Open Monthly Meeting, observation by K. Fisher.

²¹ Letter by S. Grenlie, P.E., Utah Office of Drinking Water, dated May 22, 2019, in Attachment "C" to HLC Briefing Materials.

²² Bowen First Memorandum at 2 ("DDW regulations require that the combined water distribution system have a detectible chlorine residual present."); Bowen, Collins and Associates Memorandum dated May 31, 2019 ("Bowen Second Memorandum"), in Attachment "C" to HLC Briefing Materials at 2 ("A chlorine treatment process will be added to the water produced by the well to meet State requirements; . . .").

²³ url: <https://rules.utah.gov/publicat/code/r309/r309-540.htm>.

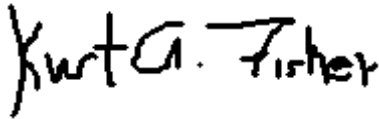
treatment.”²⁴ This raise the issue of whether chlorination is mandatory as asserted by the DPU or is not required as asserted by the homeowners in the Memory Grove residential pocket.²⁵

This is a review point that the future administration report might address.

I hope this review of the facts and issues surrounding the 4th Avenue Well site controversy is of aid to the Council and administration in focusing issues that the expected administration report might address. I hope that will aid in fully resolving the matter before the Council’s June 30 budget adoption deadline.

As always your cooperation is appreciated. Please feel free to contact me with any questions that you may have.

Very Truly Yours

A handwritten signature in black ink that reads "Kurt A. Fisher". The signature is written in a cursive, slightly slanted style.

Kurt A. Fisher

²⁴ n. 11, above, at 2.

²⁵ Your commentator’s view is that chlorination is discretionary and should be done consistent with best engineering practices and the future growth needs of the City’s central business district.