DATE: August 12, 2015

TO: WSAC

FROM: Rosemary Menard

SUBJECT: Useful Q/As

In reviewing the recently developed proposals and in various conversations with WSAC members, I have been seeing and hearing a number of similar questions about certain issues that I thought it would make sense to address prior to our discussions at the WSAC meeting this week.

In no particular order, I've present the information in a Q/A format below.

Topic 1: Water Rights

Question: If we put water into a groundwater basin that is being used by other public and private pumpers, whose water is it and do we have an enforceable right to recover it?

Answer: I had a chance to talk with the City's water rights attorney, Martha Lennihan and she tells me that, in general, the answer is yes. Her information is based on a California Supreme Court Case involving the City of Los Angeles and the City of San Fernando, the court found that Los Angeles, who had been recharging the groundwater basin using water that did not originate within that basin or watershed, had a right to get the benefits of its efforts (recover the water) unless (the dreaded unless) its doing so somehow injured those using "native" groundwater.

Question: What is the nature of the City's rights to take water at Felton and what actions related to the Felton permits and other City water rights issues are pending with the State Water Resources Control Board (SWRCB) pending conclusion of the Habitat Conservation Plan (HCP)?

Answer: The City's permits to take water at Felton and its license at Newell Creek allow the City to divert water into storage. They do not allow the City to directly divert water from Newell Creek or the Felton Diversion to the Graham Hill Water Treatment Plant.

There are two actions related to the Felton permits that are pending with the SWRCB pending completion of the HCP/environmental documentation. One requests an extension of time for the City to perfect its Felton permits. The City's historic use of water from Felton has not allowed the City to fully utilize the 3000 acre feet quantity of the Felton permits and the City's request for a time extension

is intended to avoid losing the opportunity to put unused portion of the Felton permit to beneficial use.

The second pending proposal is to rectify the oversight that direct diversion rights were not included in the original Felton permits and Newell Creek license. The City does not formally have the right to directly divert water from Felton or Newell Creek to Graham Hill Water Treatment Plant or any other non-storage facility. From an operational standpoint, the City always has, and must, directly divert water under these rights as well as diverting water to storage, at least as those methods of diversion are now interpreted by the SWRCB. For example, if the City puts water into the reservoir but pulls any water out within 30 days of the input, that is now considered direct diversion. We have explained to the State that the formal addition of direct diversion to these water rights is essential just to enable the City to keep operating as it has since the rights were issued.

Question: **Can the City serve Soquel and/or Scotts Valley without water rights changes?**

Answer: For Scotts Valley the answer is yes. Scotts Valley is included in the place of use for the City's Newell Creek water right.

For Soquel, the answer is yes and no. Yes, the City has some ability to serve Soquel using its pre-1914 water rights from the North Coast sources. On a volume basis and under normal hydrologic conditions, the City has enough water from its North Coast rights (focusing on Liddell and Majors) to provide in the neighborhood of 100 million gallons of water to Soquel for in lieu recharge over the winter and spring months. This is a change to the pre-1914 rights that is allowed to occur with no injury to other legal users of water.

The City's San Lorenzo River and Newell Creek water rights do not include Soquel Creek Water District's service area in their place of use. A water rights change would need to be processed to deliver San Lorenzo river water to Soquel Creek Water District.

Topic 2: **Habitat Conservation Plan**

Question: **What is the nature of the commitment the City would be making when it enters into a Habitat Conservation Plan?**

Answer: A habitat conservation plan is a long term, legally binding contract between the entity signing it and the state and federal agencies signing it. The terms of a HCP are typically 30 to 50 years. For a local agency like the City, the benefits of doing a HCP is the certainty that comes from understanding what is required to meet a legal obligation that the City has to "avoid, minimize or mitigate to the maximum extent practicable" its impact on threatened and endangered species, in this case coho salmon and steelhead trout. In addition once you have a HCP in place, a

local agency gets the benefits of what is typically referred to as "No Surprises," meaning that you're protected should things change during the term of your permit.

Pursuing a HCP is a voluntary action, but it doesn't mean that the City could do nothing and have there be no consequences of its inaction. Both state and federal agencies have the authority to order and enforce operational changes that they believe are necessary to protect threatened and endangered species, and courts have a long history of finding in favor of agencies taking such actions or third parties suing to force regulatory agencies to take the actions the law requires of them. The City currently has two enforcement actions related to the impacts of its water system operations on fishery resources, and both actions are being held for in abeyance pending completion of a HCP which would address the City's impacts.

Question: Are flows negotiable once an HCP has been signed?

Answer: Generally not. The point of flow negotiations is to create certainty on both sides. The DFG-5 flow set, for example is indexed to specific conditions of the river and flows are scaled back considerably in dry and critically dry years from those that are required in wet and normal years. The Confluence analysis is already using the scaled back lower flows in the model runs the Committee has seen for the "worst year shortages."

If/when the City signs a HCP it needs to be prepared to meet the conditions in the HCP. Had the HCP with DFG-5 flows been in effect during the 2014 water year, the level of shortage and the required curtailment of all customers would have been significantly greater that what the community experienced. Santa Cruz water customers did a great job cutting consumption last year, but the fish gave significantly more than the customers did, and this is the way it has been for decades. A HCP will create and require us to live with a much more level playing field.

Topic 3: Production and Yield

Question: What's the difference between production and yield?

Answer: Yield is the goal. Yield is what we really care about since it measures the increase in reliability (the reduction in peak-season shortages) that Santa Cruz customers receive, which is the ultimate benefit of any resource portfolio. Yield is a function of how the new supply/infrastructure interacts with the rest of the Santa Cruz system.

Annual Production is the means to that end; it is the expected total amount of water produced by an option over the course of a year. The amount of production

is used for estimating things like operating costs and energy usage. But what we're buying with the money we're spending is *yield*.

To compare the reliability and economic value of two approaches to producing yield, dividing total annualized costs by production is misleading. **What really matters is the annualized cost per unit of yield** or what it costs ratepayers to buy each million gallons of increased yield.

If two alternatives generate the same yield (meaning they close the supply-demand gap by the same amount), the two have equal **reliability** improvement benefits for Santa Cruz regardless of what their productions costs might be.

If two options produce the same increment of yield but option one does it at half the annualized cost per unit of yield than the other, option one is the better value for ratepayers (all else equal).

The costs per unit of yield numbers of all the building blocks (the green bars in the building block summary table on the next page) are much more similar to each other than the costs per unit of production. The green lines are what is important to understand and focus on when considering options.

For instance, when we look at BB #1 (in-lieu), the average annual *production* (the water Santa Cruz takes back from the aquifer to serve demand) is low (90 mg), because when that source is operated conjunctively with Loch Lomond, we don't need too much of it in most years. So when we divide the annualized cost by that small number, we get a really big number for annualized production cost.

But the average *yield* is much higher (290 mg) because having water in storage in an aquifer allows us to keep more water in Loch Lomond to use when needed. And in a drought, the combined benefit of the draw from the aquifer and the added water that's sitting in Loch Lomond is much higher (780 mg worst-year yield). When the annualized cost is divided by those *yield* numbers, we get the unit costs that we care about, and these results are more in line with the other building blocks.

	Updated and Expanded Building Block Summary	*6-Aug-15*											
	Building Block #	**1**	**2**	**3**	**DPR**	**3-small**	**4**	**5**	**6**	**7**	**7-lg**	**8**	**8-lg**
	Building Block Approach	**In-Lieu**	**ASR**	**DPR**	**M. M-M**	**DPR small**	**IPR-Loch**	**IPR-SeaBar**	**IPR=>DPR***	**DW Desal**	**DW lg.**	**Local Desal**	**Local Dsl lg.**
a	Capital Cost ($ M)	121	141	116	99	90	170	153	9	151	173	140	161
b	Annual O&M cost ($ M)	2.5	3.4	5.2	4.4	3.7	7.2	5.5	5.3	6.3	7.9	3.9	4.9
c	Total Annualized Cost ($ M)	12	15	15	13	11	21	18	6	18	22	15	18
d	Present Value Costs ($M)	276	335	328	296	279	470	400	120	410		340	
e	Energy Use (MWH/MG)	6.6	6.1	8.6	**9.0**	**9.3**	9.6	7.8	8.6	12.4	15.5	11.0	13.8
f	Annual Production Cost ($/MG)	133,300	42,900	8200***			12,200	na	3300***	16,700	16,000	13,700	13,100
g	Average Annual Production (MG/year)	90	350	1715	1300	1100	1715	na	1715	1100	1375	1100	1375
h	Worst Year Yield (MG)	780	800	1110		710	1050	na	1110	710		710	
i	Average Year Yield (MG)	290	310	340		330	330	na	340	330		330	
j	Worst year yield unit cost (Total Ann Cost/Wst Yr Yield)	16,400	18,800	12,600		15,500	19,900	-	5,000	25,900	-	21,300	
k	Average year yield unit cost (Total Ann Cost/Ave Yr Yield)	44,100	48,400	41,200		33,300	63,300	-	16,500	55,800	-	45,800	
l	Worst Year Peak Season Shortage (MG)	330	310	0		400	60	na	0	400		400	
m	Worst Year Peak Season Shortage (%)	17%	17%	0%		21%	3%	na	0%	21%	<15%**	21%	<15%**
n	Average Year Peak Season Shortage (MG)	50	30	0		10	0	na	0	10		10	
o	Average Year Peak Season Shortage (%)	<3%	<2%	0%		<1%	0%	na	0%	<1%		<1%	
p	Approximate Timeline (Years)	8	15 to 20	9 to 13		9 to 13	8	8	2 (plus 8)	7	7	6	6

* NOTE: As this is a conversion of Block 6 the unpaid capital costs from Block 6 would still need to be paid. Those are not included in the Block 6 costs.

** Yields not estimate at this time by *Confluence* runs, but worst year shortages expected to be less than 15%.

*** This number will increase slightly.

Topic 4: Cost Sharing between Santa Cruz and Potential Regional Partners

Question: Why aren't we seeing assumptions about cost sharing capital and operating costs being built into some of the building blocks?

Answer: Let's talk about this issue in a business economics framework. SCWD wants two similar companies, SVWD and SQCWD, to buy into (invest in) its strategy for developing a product that SCWD needs more of and both SVWD and SQCWD produce and sell as well. SVWD and SQCWD have been doing their own research about how to get more of the product and may have some alternatives that would work for them independently, but can't really help SCWD to meet its needs for the additional product it believes it needs to reliably meet customer demand.

SCWD is doing its due diligence and looking at what its options are for proceeding to develop the product it needs. It realizes that SVWD and SQCWD could ultimately choose to pursue their own options for producing the additional needed product rather than join with SCWD in investing in its strategy. Still, it wants to consider how a partnership with either or both of these entities might affect the way it views the options it is considering.

SCWD can't really ask SVWD and SQCWD to make any commitment to participating in the strategy it is developing, because SCWD isn't ready to negotiate and doesn't have its strategy firmly enough developed to allow either SVWD or SQCWD to give the concrete feedback that would be needed for them to invest. And general comments that SVWD or SQCWD might give to a general "are you interested" question aren't really that helpful because they don't help SCWD better understand what business decision either might make when all the facts are on the table. So, what to do?

SCWD finally decides that the best it can do is look at its options in two ways:

- The best case scenario that would have either or both SVWD and SQCWD fully participate and share infrastructure and operating costs on a 50-50 basis, and
- The worst case scenario, in which neither participated and SCWD had to decide whether a "go it alone" strategy for pursuing its options was feasible, and if some options were more feasible under this circumstance than others.

Realistically, this parable describes where we are with our potential regional partners. If WSAC members want to consider how having regional partners might produce cost-sharing benefits to Santa Cruz, then the likely best case option would be a 50-50 split. The flip side would be to look at the options from a "go it alone" perspective and decide whether proceeding with each option is feasible if Santa Cruz has to go it alone. Apart from the obvious exception that in lieu is not a go it alone strategy, all the other building blocks are technically feasible for

Santa Cruz to pursue independently, but are some better than others in that situation?

Topic 5: **Non-Potable Reuse, Indirect Potable Reuse and Direct Potable Reuse**

Question: **What is involved in producing Non-Potable Reuse, Indirect Potable Reuse, and Direct Potable Reuse, what can each be used for, and what is the regulatory/legal status of each?**

Answer: Non-potable reuse applies tertiary treated and disinfected wastewater effluent that can be applied to uses that do not involve human consumption. Non-potable reuse is an authorized use of wastewater effluent and is governed by Title 22 of the California Code of Regulations (http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Recharge/DraftRechargeReg2013-03-28.pdf) and water that is in compliance with the regulatory requirements of Title 22 can be used for any/all of the following purposes:

- Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,
- Irrigation: Parks and playgrounds, school yards, residential landscaping, unrestricted access golf courses, and
- "Other un-prohibited uses," e.g.,
    - Car washes (no hand washes),
    - Commercial laundries,
    - Industrial or commercial cooling that creates a mist,
    - Structural fire fighting,
    - Flushing toilets & urinals,
    - Dust suppression, and
    - Artificial snow.

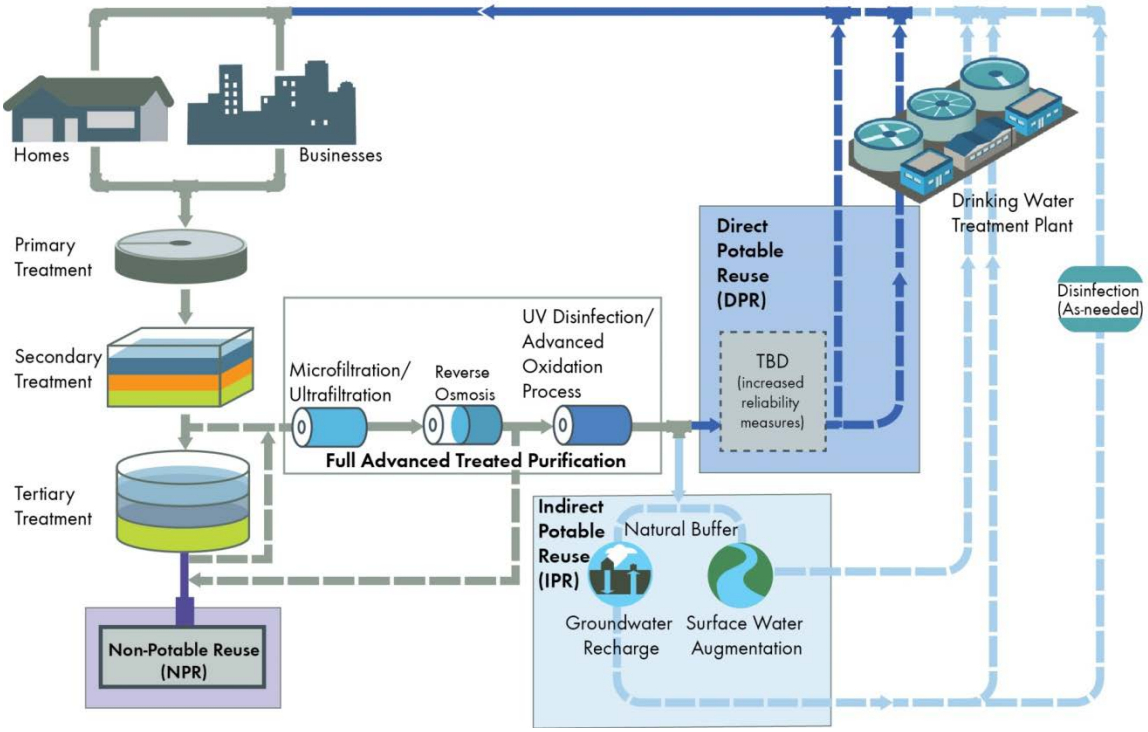
Indirect Potable Reuse is tertiary treated wastewater effluent that is further treated through a process called complete advanced treatment (CAT) and is held for a specified minimum period of time in an environmental buffer, such as an aquifer or a large surface water reservoir, before being introduced back into the treated drinking water system and used for human consumption. Indirect potable reuse via groundwater recharge is an authorized used of wastewater effluent and is also governed by Title 22 of the California Code of Regulations (CRC) http://www.cdph.ca.gov/services/DPOPP/regs/Documents/DPH-14-003E%20SOS%20Filing%202014-0612-01EFP.pdf. Draft regulations on surface water augmentation (e.g., into a raw water reservoir) is expected in early 2016.

Direct Potable Reuse is not currently included in the California Code of Regulations; it is permitable on a case-by-case basis. Beginning in 2013, the state of California convened an expert panel to work with it on the development of regulations to govern the development and implementation of direct potable reuse in California. You can find details of the panel's work at http://www.nwri-

usa.org/ca-panel.htm. A position paper from the committee is expected in late 2015/early 2016. Note that several agencies in Southern California are very actively pursuing DPR implementation at this time.

The graphic on the following page shows the treatment processes currently required for non-potable reuse and indirect potable reuse. Following this graphic is a more detailed graphic of the treatment steps involved in producing non-potable reuse water and water for indirect potable reuse and for whatever additional steps are potentially involved in producing direct potable reuse.

Levels of Reuse Treatment and Intended Uses



Process Comparison of Effluent Recycling