PROJECT MEMORANDUM

SOUTH JORDAN CITY

Pure SoJo Potable Reuse Study

Project No.: 11271A.10
Date: October 9, 2023
Prepared By: Stetson Bassett
Subject: Lab Change Recommendation

Introduction

The purpose of this memorandum is to discuss the laboratory issues that South Jordan City's (City) Pure SoJo Potable Reuse Study has experienced to date and provide recommendations for alternative labs.

Lab Issues

The City has completed extensive sampling for the Pure SoJo Study since the start of the demonstration pilot. During the first year of operation, the City evaluated approximately 330 different analytes, collecting multiple samples per week from multiple locations. The primary lab, to where the bulk of the samples were sent, was Eurofins Analytical (Eurofins). A smaller number of samples were sent to Chemtech-Ford Laboratory (Chemtech) to analyze only the parameters that Eurofins could not evaluate. The reasons to rely primarily on Eurofins was to help simplify sample collection (majority of samples sent to one lab) and streamline data storage and evaluation (majority of data results provided electronically in a single database).

Early in the project, Eurofins simultaneously implemented two major business decisions that ultimately had profound impacts on their performance: they switched to a new database software and began the process of switching laboratory locations. At that point, several issues began happening, including:

1. Shipment of bottles and coolers were delayed, which resulted in missed sampling events.
2. Turn-around time for lab results was delayed, with delays routinely exceeding 3 months.
3. Data results were inconsistent. For example, total organic carbon results varied by up to 300% at the two different Eurofins laboratory locations.
4. Holding times for samples were frequently exceeded and those sample had to be discarded without analysis/results. Some samples (e.g., hormones and pharmaceuticals and personal care products) have not been analyzed in over a year.

Lab Recommendations

The City and Carollo met with Eurofins several times over the course of a year and were promised that these issues would be resolved. However, to date, these issues have not been resolved. Given the extent of the issues and Eurofins inability to resolve them, Carollo recommends that the City switch labs. Carollo's recommendations are as follows:

1. Transition the bulk of the samples from Eurofins to Chemtech-Ford. Chemtech is a local, Utah certified lab that has been responsive and prompt throughout the entire study. They have agreed to take on the majority of the samples, including:
   a. *Pathogens (coliform, E. coli, heterotrophic plate count), regulated chemicals (disinfection byproducts, nitrogen species, metals, minerals, volatile organic carbon, synthetic organic carbon, and pesticides), unregulated chemicals (per- and polyfluoroalkyl substances [PFAS] and 1,4-dioxane), and general water quality (alkalinity, hardness, total organic carbon, etc.).*
2. The remaining samples that Chemtech cannot analyze will be sent to two other labs:
   a. *Weck Laboratories (Weck) will analyze the remaining unregulated chemicals (hormones, pharmaceuticals and personal care products, and nitrosamines). Weck is an accredited lab; however, it is not a Utah certified lab. Since the only samples being analyzed are unregulated chemicals, this does not have any impact on the study.*
   b. *Cel Analytics (Cel) will analyze the remaining pathogen samples (virus, Giardia, and Cryptosporidium). Cel has already been doing these samples for this project as a sub to Eurofins and has been great to work with.*

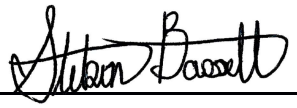
All the labs are ready to take on the new samples as soon as possible. Although the City would have to send samples to three different labs, since the volume of samples to Weck and Cel are small, the impact to the City is relatively minor.

Carollo and the City have coordinated with the Utah Division of Drinking Water (DDW). They are aware of the desire to switch laboratories, they do not have any issues switching labs, and they support the decision.

Summary

Due to the issues experienced with Eurofins, Carollo recommends that South Jordan City change labs (i.e., Chemtech, Weck, and Cel) with a new sampling procedure to meet their future lab needs.

Prepared by:



Author Name: Stetson Bassett

RESOLUTION R2023 - 47

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SOUTH JORDAN, UTAH, AUTHORIZING A PURCHASING POLICY EXEMPTION FOR THE PROCUREMENT OF A CITY CONTRACT FOR WATER SAMPLE TESTING FOR THE PURESOJO PROJECT WITHOUT COMPETITIVE BIDDING.

WHEREAS, the South Jordan Municipal Code § 3.04.020 allows procurement to be conducted in accordance with the rules and regulations adopted by the South Jordan City Council (the "City Council"); and

WHEREAS, the City Council adopted the City of South Jordan City-Wide Purchasing Policy 210-01(the "Purchasing Policy") by Resolution R2022-41; and

WHEREAS, the Purchasing Policy § 5 "Procurement Guidelines" provides that all purchases over $5,000.00 go through a competitive bid process; and

WHEREAS, the Purchasing Policy allows the City Council, by resolution, to authorize any purchase without going through a competitive bid process; and

WHEREAS, the South Jordan Public Works Department for the past 18 months has been operating the PureSoJo water purification project and has been following the plan approved by the State of Utah Division of Drinking Water (the "State DDW"), which requires specialty testing that has been performed by an out of state company for the past 18 months; and

WHEREAS, the turnaround time for the City of South Jordan (the "City") to receive test results has exceeded reasonable and needed time frames; and

WHEREAS, the City has determined it would be best to split the specific water samples for testing between three different companies that have been deemed competent to perform such work, in order to meet project goals; and

WHEREAS, the three companies identified possess the expertise, capacity and reputation needed to meet the requirements of State DDW and the City has compared quotes from the three companies and the pricing offered is competitive; and

WHEREAS, the City Council has determined that it is in the best interest of the City to authorize a purchasing policy exemption for the procurement process.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SOUTH JORDAN, UTAH:

SECTION 1. Authorization of Purchasing Policy Exception. The City Council hereby grants an exception to the City's purchasing policy to allow the City to purchase water testing services required by the Utah Division of Drinking Water for the PURESOJO project outside of the competitive bidding process.

SECTION 2. Effective Date. This Resolution shall become effective immediately upon passage.

APPROVED BY THE CITY COUNCIL OF THE CITY OF SOUTH JORDAN, UTAH, ON THIS _____ DAY OF _____, 2023 BY THE FOLLOWING VOTE:

	YES	NO	ABSTAIN	ABSENT
Patrick Harris	____	____	____	____
Bradley Marlor	____	____	____	____
Donald Shelton	____	____	____	____
Tamara Zander	____	____	____	____
Jason McGuire	____	____	____	____

Mayor: _____ Attest: _____
Dawn R. Ramsey City Recorder

Approved as to form:

Gregory Simonsen
Gregory Simonsen (Oct 11, 2023 11:05 MDT)
Office of the City Attorney

Sample Matrix for Year 2

Cel Analytics | Weck Laboratories | Field Instruments
Chemtech-Ford | Water ARC® | JBWRF/Database

	Method[a]	SP – 1 / JBWRF's Sample Location[b,c]	SP – 2	SP – 3	SP – 4	SP – 5a	SP – 5b	SP-6	SP – 6a	SP – 6b	Cost per Sample	Locations	Frequency	Cost/yr	
		JBWRF Effluent	Post-Ozone	BAC Filtrate	UF Filtrate	Primary GAC Filtrate	Secondary GAC Filtrate	Post-UV	Product Water	Taste-Testing Tap					
PATHOGENS															
Total coliform	EPA 1604	Monthly								Monthly	35	2	12	840	
E coli	EPA 9223B	Monthly								Monthly	35	2	12	840	
Heterotrophic Plate Count (HPC)	EPA 9215	Monthly									35	1	12	420	
Total cultural virus, enterovirus, and norovirus	EPA 1615	Monthly									435	1	12	5220	(+750 per time if cultural virus is required)
Adenovirus	EPA 1615	Monthly									435	1	12	5220	
Protozoan (Giardia and Cryptosporidium	EPA 1623	Monthly									400	1	12	4800	
REGULATED CHEMICALS														0	
TTHMs/HAA, with SDS[d]	EPA 524/552								Monthly		275	1	12	3300	
TTHM-FP/HAA-FP						Monthly	Monthly				335	2	12	8040	
Nitrate and nitrite as N	EPA 200.5	Monthly		Monthly			Monthly		Monthly	Monthly	44	5	12	2640	
Ammonia as N	*EPA 350.1*	Monthly		Monthly			Monthly		Monthly		43	4	12	2064	
Metals, from ECHO/JBWRF[d]	*per JBWRF, not to Lab*	*JBWRF Data (Quarterly since 2018)*												0	
Metals, additional[e]	EPA 200.8	Annually									141	1	1	141	
Minerals from ECHO/JBWRF[f]	*per JBWRF, not to Lab*	*JBWRF Data (At least monthly since 2019)*												0	
Minerals, including TDS, additional[g]	EPA 300.1	Monthly								TDS: Monthly	332	2	12	7968	
Cyanide	*per JBWRF, not to Lab*	*JBWRF Data (Quarterly since 2018)*												0	
Volatile Organic Chemicals[h,i]	EPA 524.4	Semi-Annual									200	1	2	400	
Synthetic organic carbon (SOC) groups[i,j,k,l]	(i),(j),(k)	Once, during probable application time									920	1	1	920	
Other pesticides[l]	(l)	Once, during probable application time									1210	1	1	1210	
OTHER WATER QUALITY PARAMETERS														0	
Alkalinity, hardness		Quarterly							Quarterly		72	2	4	576	
TOC		Weekly		Weekly		Weekly	Weekly		Weekly	Weekly	40	6	52	12480	
BAC Acclimation: ATP and DOC[m]														0	
Fluorescence Excitation Emissions Matrix	Water ARC®	Quarterly	Quarterly	Quarterly		Quarterly	Quarterly				200	5	4	4000	
UV Absorbance at 254 nm (UVA)	Field	Weekly	Weekly	Weekly		Weekly	Weekly		Weekly					0	
Total suspended solids (TSS)	*per JBWRF, not to Lab*	*JBWRF Data (3-5 samples / week since 2012)*												0	
Turbidity	*per JBWRF and Field*	*JBWRF Data (3-5 samples / week since 2012)*		Weekly	Weekly									0	
pH and temperature	Field	With every sample	With every sample	With every sample	With every sample		With every sample		With every sample					0	
Ozone Residual	Field		Weekly											0	
Total and Free Chlorine	Field	Quarterly							With DBP Sampling					0	
Conductivity	Field	Weekly		Weekly			Weekly		Weekly					0	
UNREGULATED PARAMETERS														0	
Hormones	EPA 539	Semi-Annual	Semi-Annual	Semi-Annual			Semi-Annual		Semi-Annual		425	5	2	4250	
Pharmaceuticals & Personal Care Products[n]	Various	Semi-Annual	Semi-Annual	Semi-Annual			Semi-Annual		Semi-Annual		850	5	2	8500	
PFAS	EPA 537.1	Monthly		Monthly		Monthly	Monthly				450	4	12	21600	
1,4 dioxane	EPA 522	Quarterly	Quarterly				Quarterly				109	3	4	1308	
Nitrosamines, incl. NDMA and NPYR	EPA 521	Quarterly	Quarterly	Quarterly			Quarterly	Quarterly			350	5	4	7000	

$ 103,737 (does not include shipping)

Notes:

a. Methods listed are those currently proposed at this time. Equivalent EPA approved methods may be substituted at time of analysis. Samples will be analyzed at laboratories currently used JBWRF, and other NELAP-accredited labs including Chemtech Ford, Eurofins, and/or the Utah Department of Health Division of Lab Services.

b. JBWRF effluent samples will be collected from either JBWRF's existing sample location (JBWRF-collected samples, total coliform, and heterotrophic plate count) or Standpipe 1 at the Demonstration Facility (all other samples).

c. For samples collected at SP-6a, the chlorine system shall operate for a minimum of 1 hour prior to sampling. TTHMs and HAAs will be analyzed for samples collected directly from the tap. In addition, a 7-day simulated distribution system (SDS) test will be completed by analyzing TTHMs and HAAs on a 50/50 blend with distribution system potable water after a 7-day holding time at distribution system temperatures.

d. The following metals are included from the ECHO database and ongoing JBWRF testing: Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, and Zinc.

e. The following metals will be sampled and tested as part of this Test Plan: Antimony, Barium, Beryllium, Thallium, Aluminum, Iron, and Manganese.

f. The following minerals are included from the ECHO database and ongoing JBWRF testing: Chloride, ortho-Phosphate, Sodium, and TDS.

g. The following minerals will be sampled and tested as part of this Test Plan: Bromide, Bromate, Chlorate, Chlorite, Fluoride, Sulfate, Perchlorate.

h. VOCs include the following: 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethylene, 1,2-dichloroethane, 1,2-dichloropropane, 1,2,4-trichlorobenzene, benzene, carbon tetrachloride, cis-1,2-dichloroethylene, dichloromethane, ethylbenzene, monochlorobenzene, o-dichlorobenzene, para-dichlorobenzene, styrene, tetrachloroethylene, toluene, trans-1,2-dichloroethylene, trichloroethylene, vinyl chloride, and xylenes.

i. Semivolatile SOCs include (by EPA Method 525.3): alachlor, atrazine, benzo(a)pyrene, chlordane, di(ethylhexyl)-adipate, diethylhexylphthalate, endrin, heptachlor, heptachlor epoxide, hexachlorobenzene (HCB), hexachlorocyclopentadiene, lindane, methoxychlor, pentachlorophenol (PCP), polychlorinated biphenyls (PCB), simazine, and toxaphene. SOC groups representing herbicides should be collected during the periods of time when they are most likely to be applied in the local area of the PWS.

j. Chlorinated acid SOCs include (by EPA Method 515.4): 2,4-D, 2,4,5-TP (Silvex), Dalapon, Dinoseb, pentachlorophenol (PCP), picloram, and dicamba.

k. Methylcarbamoyloximes and N-Methylcarbamates include (by EPA Method 531.2): Aldicarb, Aldicarb sulfone, Aldicarb sulfoxide, Carbaryl, Carbofuran, 3-Hydroxycarbofuran, Methiocarb, Methomyl, 1-Naphthol, oxamyl (Vydate), and Propoxur.

l. Other pesticides include: Ethylene dibromide and 1,2-dichloro-3-propane (EDP/DBCP) by EPA 504.1, Glyphosate by EPA 547, Dioxin (2,3,7,8-TCDD) by EPA 1613, Diquat by EPA 455.2, and Endothall by EPA 548.1.

m. Weekly during BAC acclimation period. Monthly thereafter.

n. Pharmaceutical and personal care products (Eurofins ESI+ and ESI- lists), which will include DEET, caffeine, gemfibrozil, iopromide, and sucralose as listed in the Table 2 of the DDW Letter. The project team will consider those listed in Table 2 but may choose to consolidate down to a single PPCP method based on the lab's ability to provide them in one analysis.